

THE ARCHITECT & BUILDING NEWS

8 DECEMBER 1955 · VOL 208 · NO. 23 · ONE SHILLING WEEKLY

- **BANK, TOTTENHAM COURT ROAD**
- **POLICE HOUSING, BIRMINGHAM**
- **DISCUSSION ON BUILDING
MAINTENANCE**

PUBLISHED IN LONDON SINCE 1854

WHERE SIMPLE OR COMPLICATED SCHEMES OF VENTILATION ARE INSTALLED, AND THE OPERATION IS REQUIRED, BY REMOTE CONTROL OR OTHERWISE, AND THE WINDOWS HAVE ANY OF THE FOLLOWING CHARACTERISTICS:—

- OPENING OUTWARDS
- OPENING INWARDS
- TOP HUNG
- HORIZONTAL CENTRE-HUNG
- BOTTOM HUNG
- VERTICAL PIVOT HUNG
- SIDE HUNG
- HORIZONTAL SLIDING
- VERTICAL SLIDING

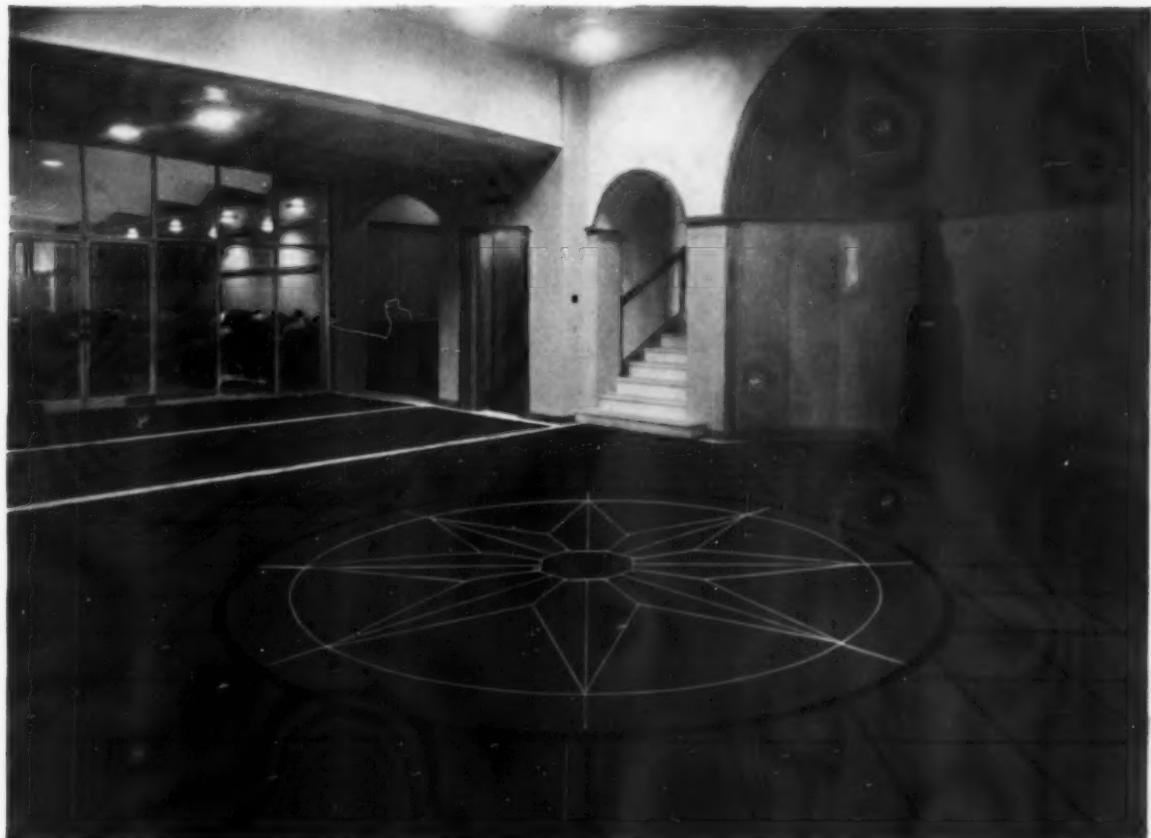


The illustration shows One Set of Electrically operated Twin Tension Rod Gear with Counter-Balance Unit operating one continuous opening light, 74' 0" long x 5' 0" deep. Note the Spiral Balance Wheel fitted at the end Sprocket.

Always Specify WINDOW OPENING GEAR for
SKYLIGHTS, LANTERN LIGHTS, CLERESTORY LIGHTS, FANLIGHTS, SIDE WALL
LIGHTS IN WOOD OR METAL WINDOWS, OR IN PATENT GLAZING, ROOF LIGHTS
AND BENCH LIGHTS IN GREENHOUSES, DAMPERS, TRAP DOORS, SHIPS SKYLIGHTS, ETC.
HAND - OPERATED - ELECTRIC - HYDRAULIC - REMOTE CONTROL
by WILLIAM NEWMAN & SONS LTD.
GEARING DEPT., BRANCH WORKS 3, WELLHEAD LANE, PERRY BARR, BIRMINGHAM

Barry's Heavy Ruboleum

MONARCH OF THE LINOLEUM WORLD SINCE 1907



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Contractors :
Korkoid Decorative Floors

HEAVY RUBOLEUM is a superfine linoleum 6.70 mm. thick (approx. $\frac{1}{4}$ "), was first produced by us in 1907, and still holds its position of the highest merit as a floorcovering because of its properties of hygiene, resilience, durability and decorative colourings.

HEAVY RUBOLEUM is produced in 35 beautiful and popular colours, plain and marble effects.

HEAVY RUBOLEUM is especially produced for use on Ship decks and Public buildings. It is available through high-class retail Furnishers and Contract Flooring Specialists.

HEAVY RUBOLEUM is the solution to your flooring problems

SAMPLES ON APPLICATION TO THE EXCLUSIVE MANUFACTURERS

BARRY, OSTLERE & SHEPHERD, LTD.
KIRKCALDY • SCOTLAND



Lead flashings and weatherings "set the seal" on a good roof

The Council's Technical Information Bureau will gladly help with problems on the use of Lead Sheet and Pipe in building work. Details of the main uses are given in a series of Information Sheets and Bulletins, which can be obtained by applying to the Council.



Lead is even more widely used today than in the past, because no other material can be fitted close to the structure with the same ease nor can give as long a trouble-free life in town, rural or marine exposures. For lowest cost per annum, there is nothing to equal lead roofing, weatherings and flashings.

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EAGLE HOUSE • JERMYN STREET • LONDON S.W.1 Telegrams: Ukleadman, Piccy, London Telephone: Whitehall 4175

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De La Rue have produced a boiler designed from the very first for oil—the Potterton oil-fired boiler which achieves a true working efficiency of 78% of the heat from the oil transferred to the water. This boiler is available in a range of outputs from 108,000 B.T.U. to 288,000 B.T.U. and will be supplied as complete units with fully automatic oil-burners and fitted controls—thus combining optimum performance with minimum fixing costs.

POTTERTON Oil-Fired BOILERS



Thomas De La Rue & Co. Ltd. (Potterton Division), 20/30 Buckhold Road, Wandsworth, S.W.18.

DLR 507



This beautiful, embroidered ball gown by Victor Stiebel includes 125 yds. of 'Terylene', I.C.I.'s wonderful new man-made fibre. 'Terylene' begins as a petroleum distillate emerging later as filament yarn and staple fibre. During its chemical transformation it is polymerised in autoclaves at very high vacuum and high temperatures.

To provide safe, efficient lighting in these important processes, Holophane Flameproof Industrial Pendants (Buxton-certified) have been installed in the Wilton plant of Imperial Chemical Industries. These immensely strong but lightweight metal fittings have tough prismatic refractors to ensure adequate lighting of control panels where readings are constantly needed, as well as providing a good overall illumination of the plant.

* 'Terylene' is a registered trade mark

For hazardous areas in chemical processing and other plant requiring the specialised services of Holophane, our Technical Service Department will gladly co-operate in the advancement of a planned scientific lighting system to meet special needs. Meanwhile please ask for Publication 5301 Flameproof Fittings · Publication 4706/A Industrial Lighting.

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It consists of 30 blocks of marble and is 95 feet high;
to reach the top there is a spiral staircase
in the interior which has 190 steps.

vertical transport in 190 A.D.

vertical transport today

is resolved with efficiency and
comfort, using lifts and
escalators by



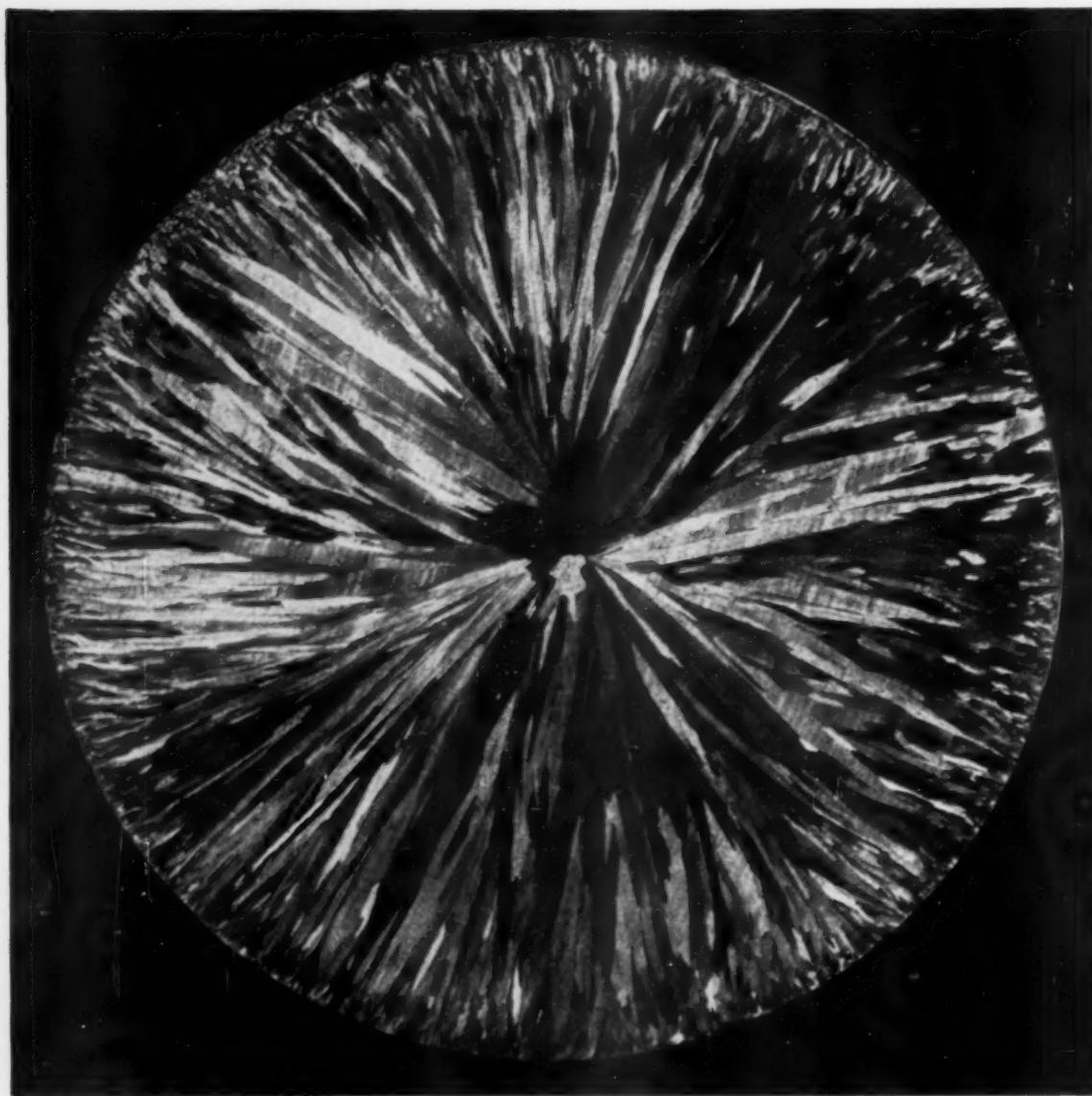
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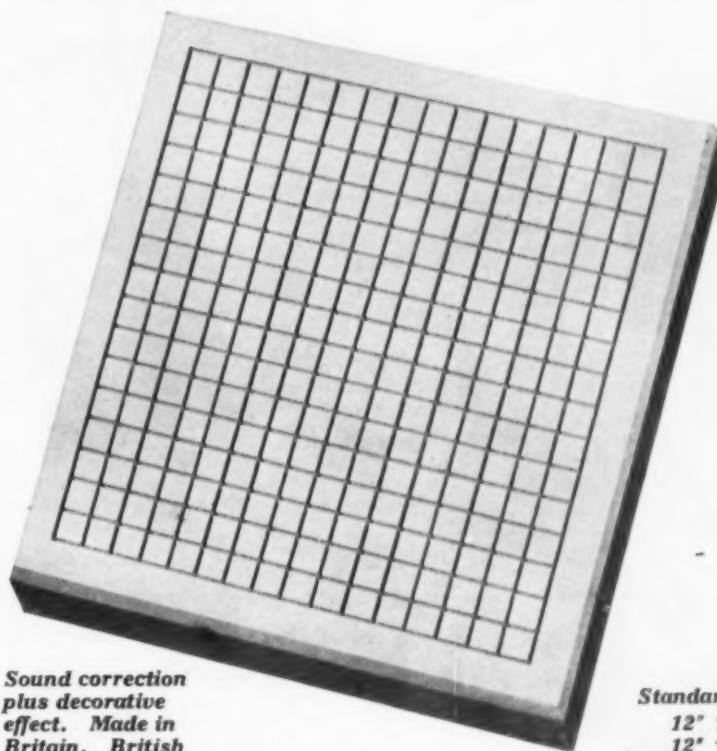
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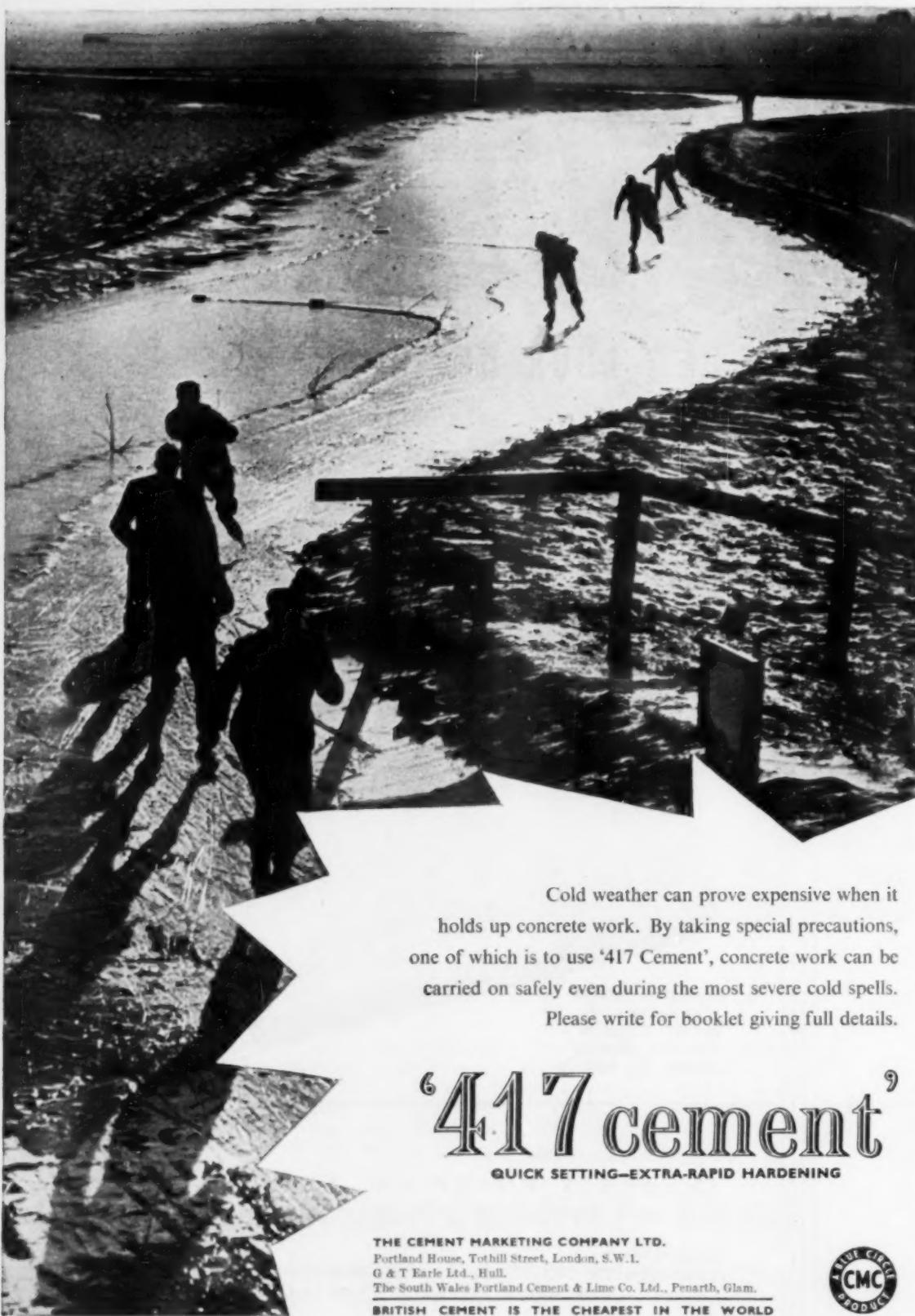
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BRITISH CEMENT IS THE CHEAPEST IN THE WORLD



London Airport New Terminal...

is fitted with L.E.F. Raising & Lowering Gear

LONDON Electric Firm Ltd., specialists in the design and manufacture of Raising and Lowering Gear and Winch Gear, supplied equipment for a number of installations in the New Terminal building at London Airport.

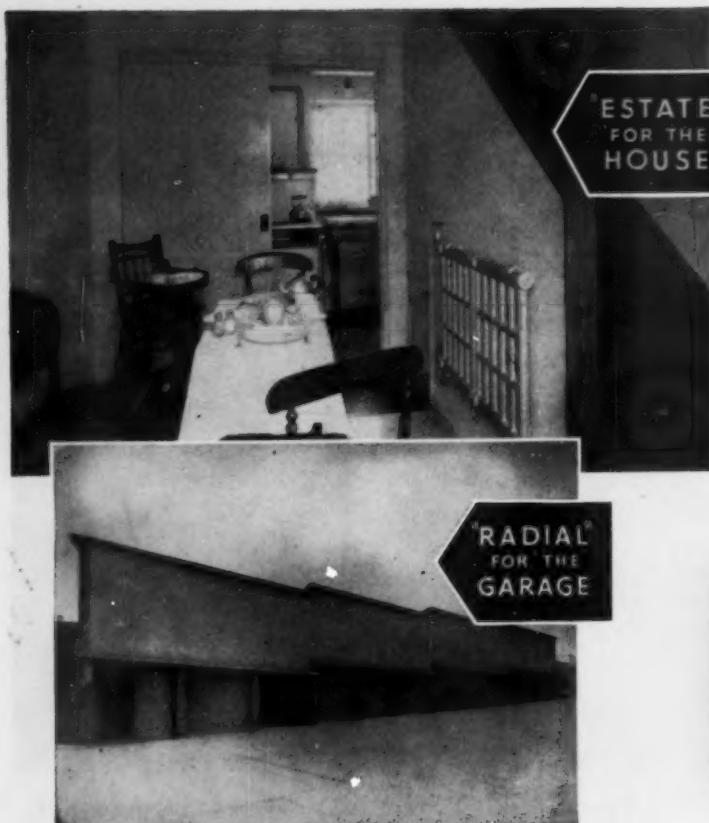
L.E.F. Raising and Lowering Gear is installed with the special fittings designed by the Architect, Frederick Gibberd in the Passengers Concourse. Special Lifting Gear is also provided for use with the giant loudspeaker. Windows in the Control Tower are operated by a number of small L.E.F. Hand Winches.

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SLIDING DOOR GEAR

FOR
HOUSING
ESTATES

FOR THE
PRIVATE
RESIDENCE



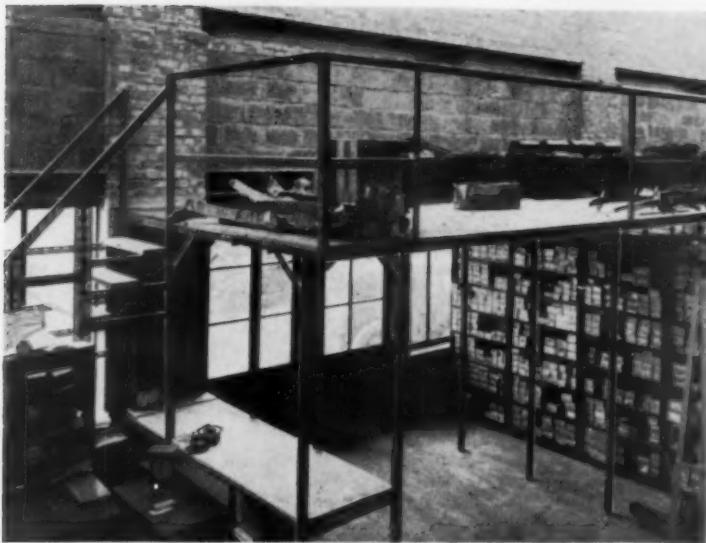
ELLARD Sliding Door Gear is ideally suited for use on large housing estates and for the distinctive private residence. ELLARD "Estate" Gear is silent—easy running—troublefree, and has elegant appearance. ELLARD "Radial" Gear for garages and out-houses, provides smooth running action, gives maximum space, and is easy to fix. Both these well-known types of ELLARD Door Gear are moderate in price and immediate delivery can be obtained from large ironmongers and builders' merchants throughout the country.

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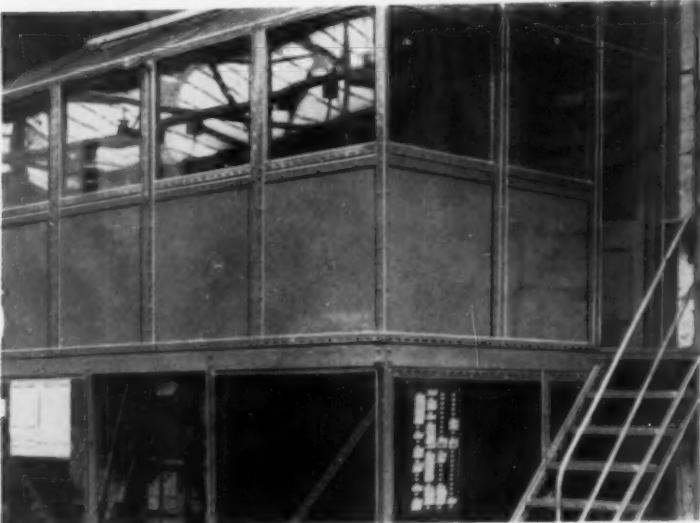
TELEPHONE 613/4

IT PAYS TO THINK OF DEXION

- at the planning stage



Service Depot builds storage platform. Iron Bridge Service Depot Ltd. of Southall, Middlesex, built this overhead storage platform to carry 20 tons of motor-car parts. It effects a big saving in space, and the supports also serve as dividers for storage bins. Storage structures of Dexion can make full use of any existing space; and they have the great advantage of ensuring easy adaptability to changing needs.



Machine Shop Engineer's office quickly built. Thomas Allan & Sons Ltd. of Thorndaby designed this office with tool store underneath to be built with conventional materials. They used Dexion instead when they found it was quicker and cost less. In jobs of this sort, Dexion invariably supersedes old-fashioned materials and methods.

A FACTORY LAYOUT must be flexible, capable of being adapted at short notice to changing circumstances. This applies particularly to storage requirements and works equipment.

There is no more versatile material for building stores and equipment, exactly to your own designs, than Dexion Slotted Angle. Such Dexion equipment is quick and cheap to install. And any Dexion structure can be readily adapted and altered to meet changing needs. There is no waste, no scrap: Dexion is fully recoverable, and can be used again and again.

When you are planning the building and layout of a factory, Dexion deserves careful consideration at an early stage. This versatile material may bring about important economies, initially and for years to come.

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GET THE FACTS

Dexion 225 is sold in packets of ten 10-ft. lengths, complete with bolts. Steel Dexion (price from 1/3½ to 1/5 per foot) is rust-protected, stove-enamelled. Where a light but strong, non-magnetic, non-corroding material is required, use Alloy Dexion (full technical details and prices on request). Send today for sample piece of Dexion and illustrated booklet AN.144 showing many uses in industry. Dexion Ltd., 65 Maygrove Rd., London, N.W.6. (Telephone MAlden Vale 6031-9.)



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Manager's Office of the Leeds Permanent Building Society's Glasgow Branch. Photo by courtesy of the Council of Industrial Design

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Jacobean panelling . . . a desk as large as the side of a house?—No, not these days . . . You can choose well designed office furniture that is dignified yet modern in style, in a very wide range of decorative woods. Wood furniture and fittings give an air of distinction and warmth to an office interior. The natural beauty of the wood itself, its rich grain and colouring, can help you to create the right atmosphere for business premises.

There's nothing like **WOOD**

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for flashings and general roof work

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Built by Direct Labour.

Details:

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Bossed chimney aprons, gutters
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Flashing quality.

Super Purity Aluminium is a plumber's metal; 99.99% pure and the most ductile and workable form of aluminium obtainable. It is a permanent roofing material which costs considerably less than the more traditional plumber's metals, although it is capable of lasting just as long. Super Purity is particularly adaptable to chimney flashings both from the economical and the practical point of view.

Plumbing contractors and craftsmen will be interested in the instructive booklet "Super Purity Aluminium—Technical Notes for Plumbers" and other illustrated literature obtainable from the Development and Technical Service Department of the British Aluminium Co. Ltd.



Case history No. 6

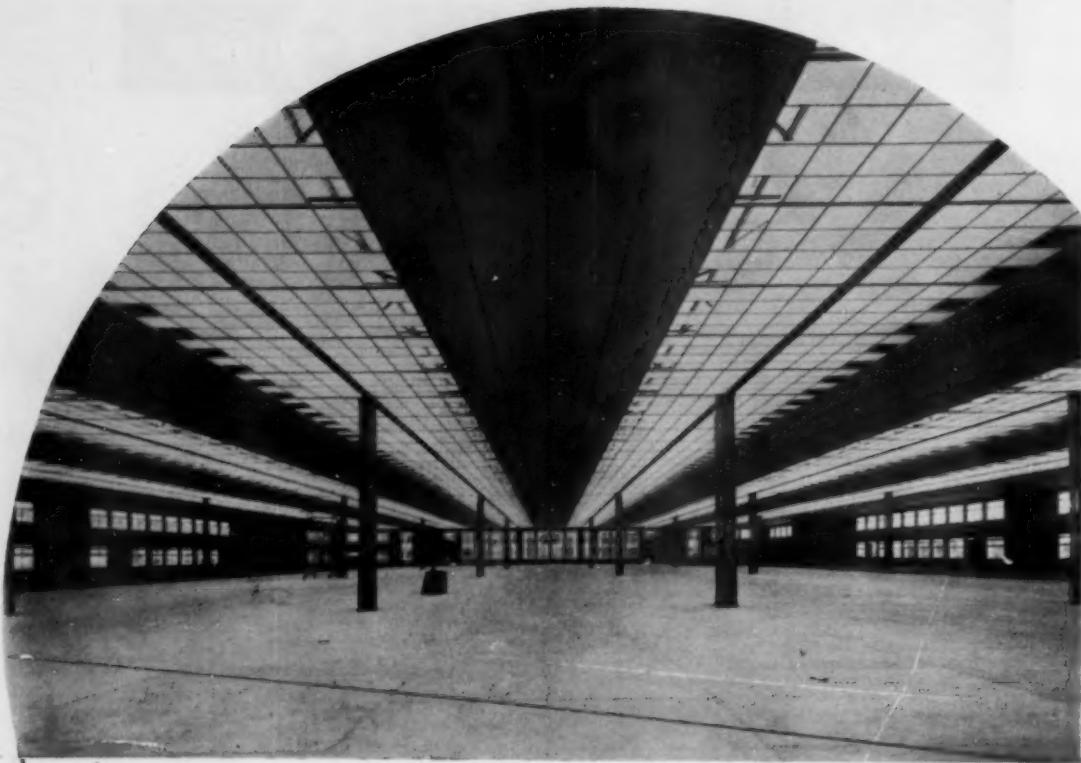


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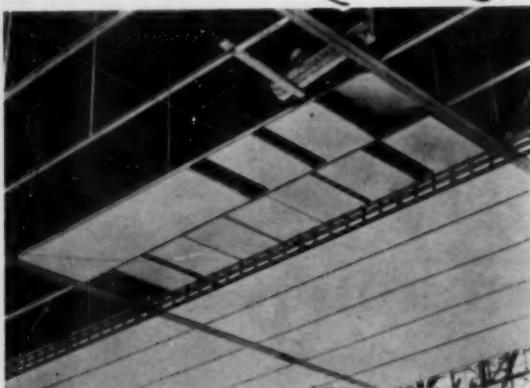


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**10 THICKNESSES
5 DENSITIES**

Melsbroek (Brussels Airport)
—detail



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LANDMARKS IN STEEL



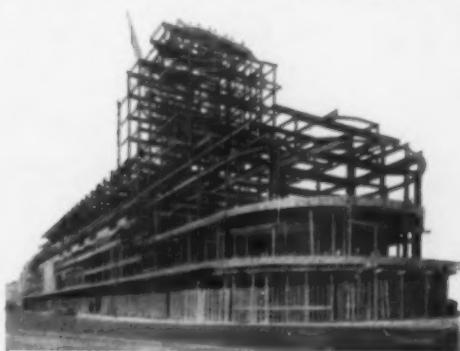
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**'Hurry up!
Breakfast's
ready!'**

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Light-gauge copper tubing for water and waste services made to British Standards by I.C.I. Metals Division is neat, smooth-bored, economical, easily manipulated and durable.

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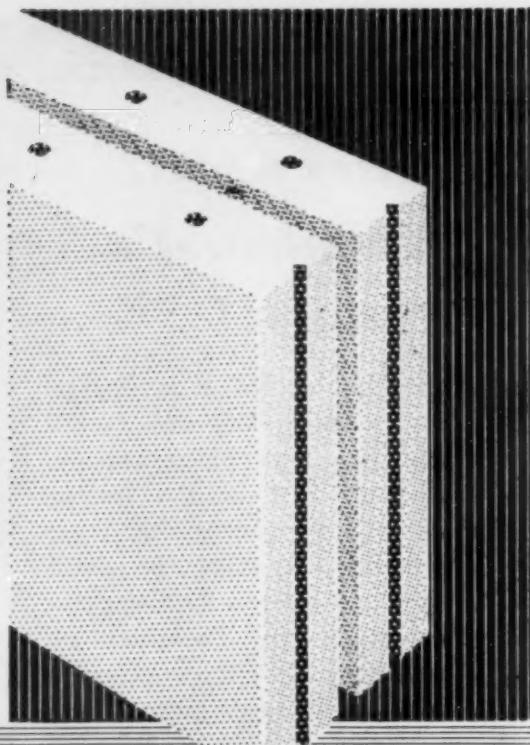
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FOR TROUBLE-FREE
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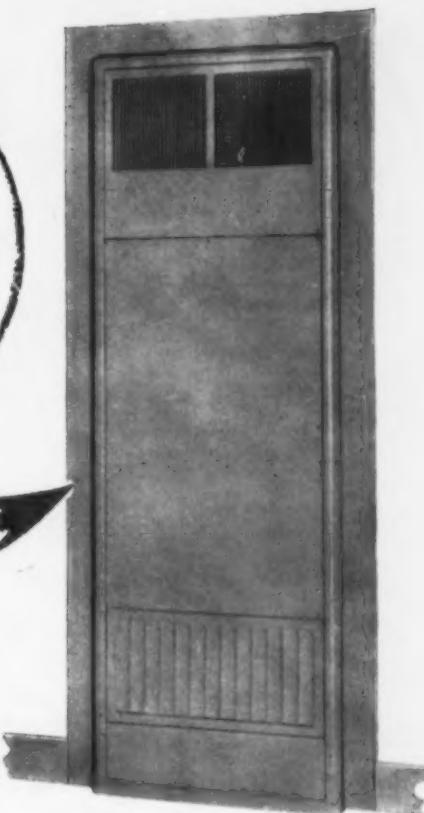
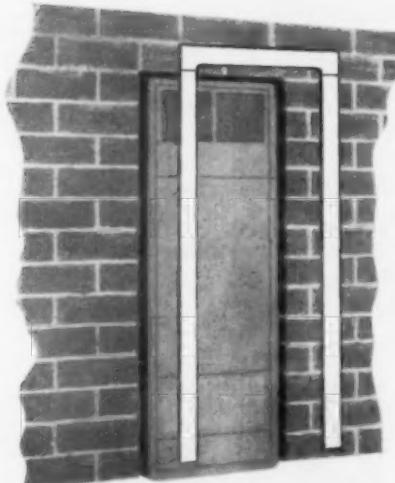
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malleable iron

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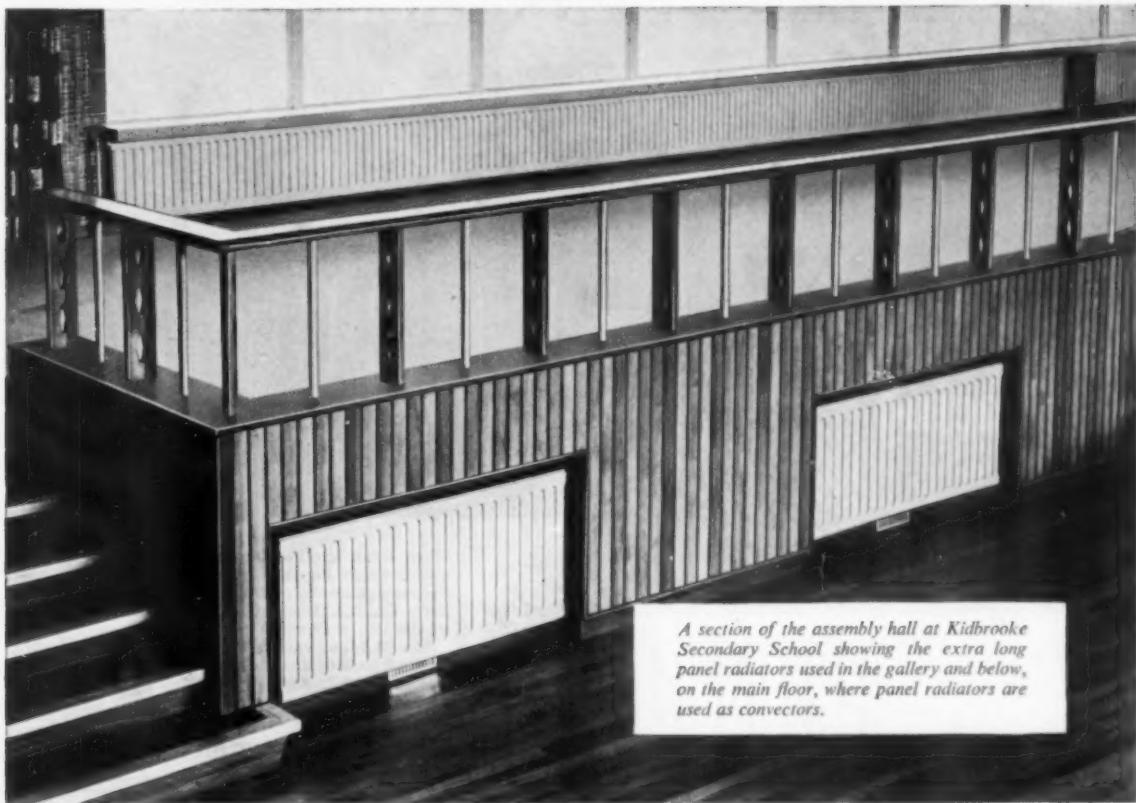
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IDEAL FOR WALL FIXING
EASY TO PAINT,
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MORE RESPONSIVE TO
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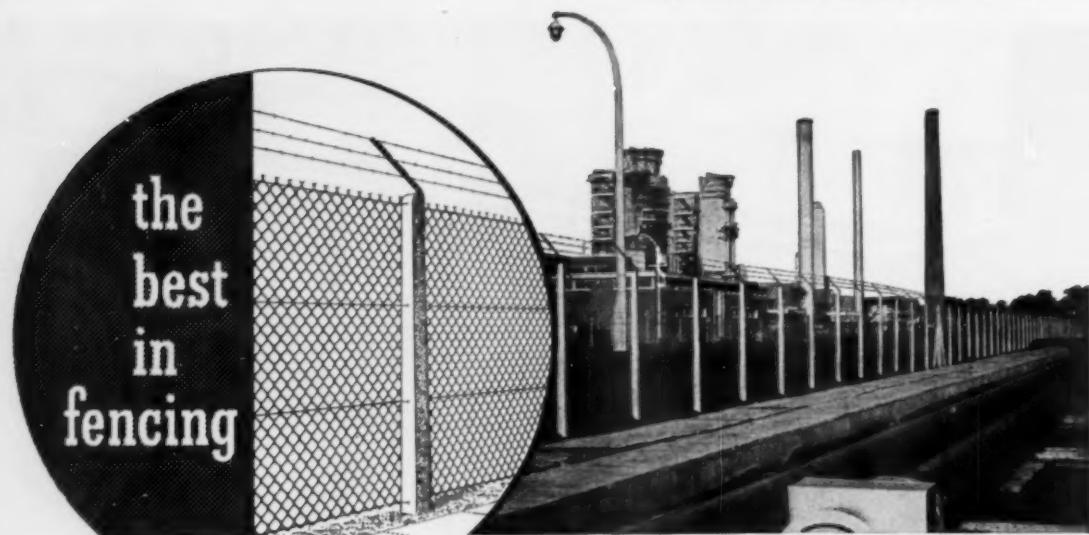
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Gulf Panel Radiators provide the perfect balance of radiation and convection to ensure the highest standard of heat comfort coupled with efficiency of operation and maximum fuel economy.

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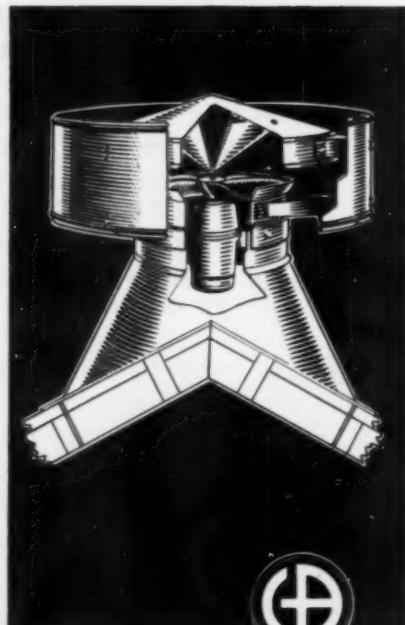
Suitable for flat, sloping or ridge fixing, this 'Lowline' version of the Greenwood-Airvac 'Mechavent' provides a neat and close-fitting unobtrusive roof ventilator. The 'Lowline' is built to withstand the rigours of any climate in the world and to continue to give unfailing performance. This is one of the many Greenwood-Airvac Ventilators for all purposes. Fully detailed literature on request.

TECHNICAL FEATURES

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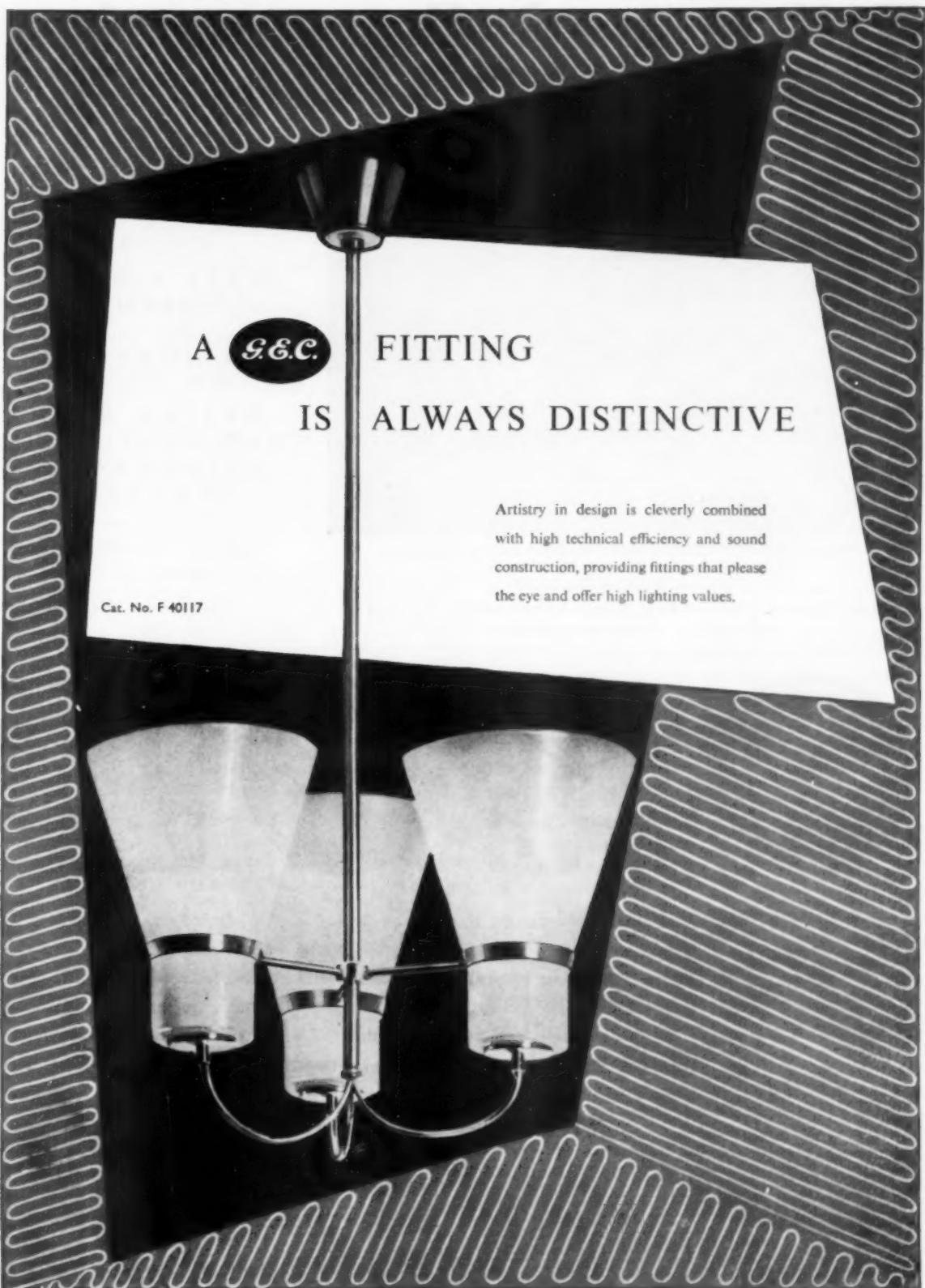


Greenwood-Airvac ventilation

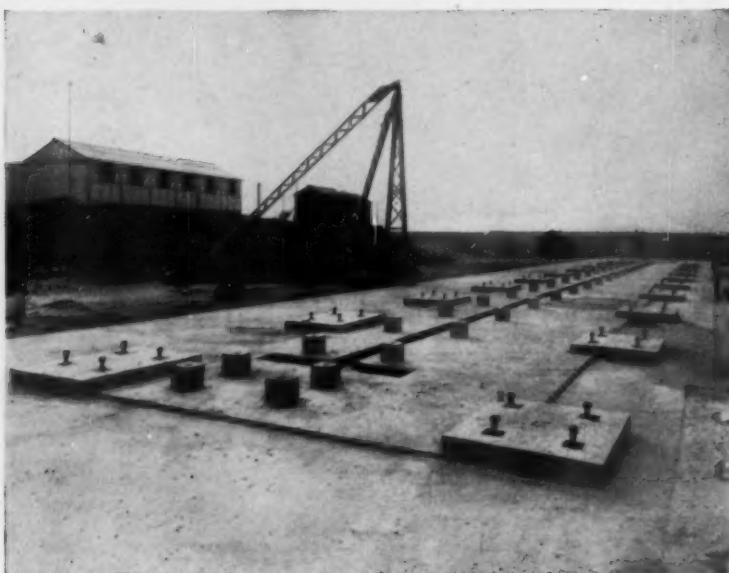
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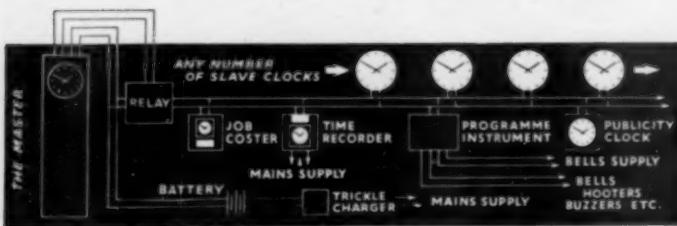


THE CLOCK ON THE WALL

No longer an afterthought, the clock on the wall is often planned with the wall itself, as integral a part of a new building as, say, its lighting system.

As one clock on one wall, or as a hundred 'Slave' clocks on a hundred walls, synchronized to a 'Master', Gibson clocks are specified at the blue print stage, for hospitals, schools, factories, or wherever accurate time-recording is a necessity.

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THE
ARCHITECT
& BUILDING NEWS

8 December 1955

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THE ROADS: APATHY OR COMMON SENSE

IS it possible that the Government and the responsible Ministries are stalling over the Road Traffic problems of London and the rest of the country in order that the situation may be solved by a despairing resort to helicopters and shoe-leather, or in order to avoid either action or the cost of action?

In the meantime traffic increases, the roads get less efficient to deal with it, more money is lost by delays and the prices of goods distributed by road go up, fares increase and exports go down. It is probable that inefficient and uncoordinated transport in this country contributes more to the "inflationary spiral" than any other single cause. Exactly what will happen when the traffic of Central London and of other large cities really does sieze-up is a question that does not worry the pundits of Whitehall, so long as they are not disturbed more than they are at present.

The average speed of a London bus is a little over eleven miles per hour, about the same speed as was maintained by a late Victorian two-horse vehicle; just before the war it was estimated that traffic congestion in London cost the community some £70 million a year, at that rate what is the present value of this "down-the-drain" waste? How many oil-tankers would be saved, or used elsewhere, if the traffic blocks were eased or eliminated? Hundreds of such questions could be asked and the official answers amount to little more than the proverbial lemon.

Yet hundreds of suggestions and views are put forward by technicians, the police and the public interested in motor transport; papers are read and discussed in all solemnity by town planners, engineers and even laymen; federations and councils pump out propaganda; books are written and published; all these time-absorbing pastimes must be added to the waste of traffic congestions, for it seems that little results, even to ease the worsening situation.

What are some of the essential facts? The present programme for the roads is less than that put forward in 1935, twenty years ago. The first major road im-

provement in London since the war (Cromwell Road) and projected long before the war, has just started and proceeds so slowly that its 2½ miles may take something like four years to complete. And then what of the increased bottle-necks it will produce at Knightsbridge and Hyde Park Corner? The 1946 programme for eight hundred miles of trunk road would take, at this rate, about eighty years to accomplish, to say nothing of the seventeen hundred miles of improvement to old trunk roads mooted at the same time. No wonder that some of us think the powers that be await the helicopter or some new miracle rather than tackle the problems now.

The housing problem was tackled by an intensive drive; schools by a minor one; armaments and power are now the subjects of stupendous efforts to overcome current problems. Why not roads?

Much of the present chaos and many, if not most, of the road casualties are the direct result, not of bad driving, but of uncoordinated method and the lack of sheer common sense.

Is it, for example, common sense to have so few standards laid down for the design of vehicles intended for road use? Overall sizes, a few regulations about lights and the like are not enough to determine the correct design of roads which the vehicles have to use. Again, is it common sense not to standardise road signs throughout the country and not to follow the accepted international signs? Or allow local authorities so much individualism as to the type of road lines, studs, curbs and edges, lines of sight and so on, so that these so-called aids confuse rather than help the driver? The same can be said regarding the illogical design of zebra crossings and their flashing side-lamps, the confusion of traffic lights with the latter and with street-lighting and with neon roadside and other privately licensed signs; the changes of road lighting, road widths and road surfaces throughout the country and especially on the incoming main roads to London. How can roads be sensibly used or scientifically de-

signed when no man knows what he may come upon or be called upon to design at any given space or time? These are some of the immediate problems, a few from innumerable others.

A coordinated control for the roads and their details, even as they now exist, laying down common-sense standards for design could be established in a short time by goodwill and the co-operation of all road users and the Government and local authorities. Send investigators to the U.S.A., to France, Belgium and to Germany to see how it can be done, at any rate in part.

It is common sense to tackle the existing roads with intensive vigour and as far as may be put them into decent order; before, or while, at the same time, planning longer-term projects for new roads (without absorbing too great an area of virgin land) and the duplication of trunk roads between what are already congested bottlenecks.

The central urban bottlenecks are largely caused by daily motor-commuters and by the parking problems thereby created. Here again hard thinking guided by common sense can play more part than it does at present. Solutions do not lie in digging holes under London squares (still hankered after by some) in order

to take a few hundred cars off the streets, out of peak hours, in a few localities; nor in the installation of parking meters to encourage more cars to come to central London and park in the streets. But to provide ring-road parks and multi-storeyed garages, so that central area public transport can work more efficiently and speedily; and by utilising the, at present, wasted areas over railways and sidings and many other now wasted spaces in the urban centres for off-the-road parking. A highway is a channel by means of which people and goods should have free passage from place to place, it is not for the storage of temporarily unwanted motor cars. Here again common sense can rule traffic planning and the expenditure of money to save money and time and to stop waste.

Where will the money for these immediate things come from and quickly enough to be of use? Is it too common sensible to suggest that a National Road Loan be floated? To be administered by a Commission for surface traffic (all traffic, roads, railways and canals—to fit each in with the other) and to be set up by the Government, on the lines, say, of the Electricity Authority or the now diminished War Damage Commission. Is it, or something like it, not possible?

EVENTS AND COMMENTS

HYA PILKINGTON!

The second brain-child of the Glass Age Development Committee (G. A. Jellicoe, Edward D. Mills and Ove Arup) sponsored by Pilkington Brothers was unwrapped at the Building Centre last week. First Soho of 2,000 A.D., now High Market, a "super-shopping centre" covering a million square feet to cater for Midland housewives in the year 2,000 A.D.

It is the work of two A.A. trained architects, Mr. and Mrs. Gordon Michell, and shows how well-nigh impossible it is to project oneself fifty years into the future. In the drawings by B. L. Adams, the clothes, motor-cars and helicopters are hardly up to the minute and the scheme itself is what we could do to-day if we had a mind to and thought it would pay its way.

Gordon Michell, in a very able, though rather overdone, explanation showed all the enthusiasm of a man who has been thoroughly into the thing and would start on it at the drop of a hat. A good deal of what he said is given elsewhere in this issue.

During the last few years our hum-drum way of life has felt the impact of several nuclear explosions—two from the Kadleigh laboratory and two more from the Pilkington cauldron. Comprehensive schemes like High Market may point the direction in which we are going, I can't say. They obviously need a lot of examination into the validity of the assumption and reasoning on which they are based, since we cannot afford to put all our eggs into one or two large baskets if they have any



Gordon and Eleanor Michell, designers of the High Market project (see pages 750—753.)

holes in them. But the exercise of thinking about these grandiose projects and criticising them is helping all the time to clarify our ideas.

I do not agree with the 2,000 A.D. aspect of the Glass Age projects. I want to see something that could be done to-day. The Alexandra Palace site, the finest in London is not used to its best advantage for example.

If we deal with to-day's problems as we ought, it will give our grandchildren a chance to do their own stuff. They will not thank us for doing the reverse. But perhaps I have treated High Market too seriously for what it is, a brilliant esquisse.

GOODHART RENDEL AT THE A.A.

Although the membership of the A.A. often seems to me to be insensitive, to important things it rarely fails to show appreciation of an outstanding speaker. Over a hundred members and guests dined in Bedford Square last week and afterwards heard Mr. H. S. Goodhart Rendel talk on "Architectural Memories, 1905-1955". Mr. Goodhart Rendel is one of our few remaining architectural swells—oh how I wish that I could have an astrakhan collar to my overcoat—and he is a scholar as well. More than that he is a known authority on the lighter side of musical dramatics. He quoted architectural lyrics which he had written as a student at the A.A. when pantomimes were pantomimes and he charmed his audience by referring to "a friend of mine who used to perform at the Alhambra told me that she . . ." One at once saw the hansom cab, the silk hat, the bouquet. In fact Mr. Goodhart Rendel's whole talk was handsome, silk hatted and full of bouquets for an age of architects almost unknown to today's students although many of their interesting and even fine buildings form part of the background to our lives.

Mr. Goodhart Rendel's paper, most beautifully composed and delivered in his own special confidential way, was illustrated by slides as it were in the text. How much better this method is than the lazy one of preparing a short address and then putting up the slides and commenting upon them.

Mr. R. E. Enthoven in proposing the vote of thanks spoke of happy days in Mr. Goodhart Rendel's office, where discussions on architecture and life in general appeared to take precedence over actual work. Mr. Enthoven told us that Mr. Goodhart Rendel started designing and putting up buildings while he was still at Eton but what he did not tell us was that he, Mr. Enthoven, owns one of them. The Ritz Hotel was much talked about not only as an outstanding building but as the first steel framed job in London. Several people in the room seemed quite familiar with it from every day acquaintance. I must confess that I have penetrated no further than the bar and that only once. Sir Hugh Casson who seconded the vote of thanks commented on the long lasting properties of the décor and someone else said that his family, always went there because the corridors were so nice for children to play in.

Although Mr. Goodhart Rendel was supposed to be reviewing fifty years of architecture he really did not progress much beyond the early twenties. He said almost nothing about modern architecture, except to refer to Le Corbusier's new chapel, as "Mickey Mouse architecture". It was a most enjoyable evening.

LAST THOUGHTS ON THE BUILDING EXHIBITION

I think many architects took the Building Exhibition very seriously this year but my information is that fewer individual architects actually visited it. This theory may be disproved by the number of A.B.S. concession tickets being handed in but it is based on observation and information from exhibitors. Many architects it appears went several times but office staffs did not appear to be going in such large numbers. Perhaps everyone was too busy.

It was a good exhibition but contained very little that was new, or startling. The standard of display was high, stands were well finished, coloured, lit and decorated. So much so that they made the exhibits quite dull. Some stands looked like show cases for electric light fittings and pot plants.

I agree with my polite—to me—friend, Astragal of the *Architects Journal*, that it is high time we had a change in exhibitions. Stand designers and fitters have had a wonderful run since the war. They should be given a rest. Back to pre-war B.I.F. Castle Bromwich standards! What is the alternative.

THE EVENING NEWSWAY

Solving London's worsening traffic problem has been armchair planners' small talk for some time. Newspapers have flayed the status quo (a thick skinned monster) and are now beginning to put up loudly trumpeted schemes to cure everything.

The Evening News scheme for an additional width of road to be built out over the Thames alongside the Victoria Embankment all the way from Blackfriars Bridge to Battersea Bridge would be very nice as a speed way out—and of course those connected purely with motoring have welcomed it—but would it do half the good that the replanning of the Oxford Street-Tottenham Court Road crossing or Hyde Park Corner? My impression is that the existing embankment is one of the few traffic arteries in minor London which work reasonably well. I do not think it is a terribly good idea.

ST MARGARET'S BAY AGAIN

Some years ago I wrote about the need for adequate sea defences at St. Margarets Bay, near Dover, and the question of who has to pay for them. The Defences are now complete and presumably paid for, and the reconstruction of the place is being planned. Mr. G. A. Jellicoe has designed a layout and a model has been made and was illustrated in *The Times* last week. Before the war St. Margarets Bay was a comparatively undeveloped and unspoiled seaside village. Mr.

Jellicoe's plan will undoubtedly be well thought out and detailed but the decision of the Dover rural district council to develop the village as a seaside resort will no doubt enable the Englishman to exhibit to the full his flare for ruining the seaside. Only the most rigid control by Mr. Jellicoe can prevent this. Mark my words.

NOT IN KEEPING

A man who wants to build a house in Worcester in the "Palladian Style" has been refused planning permission because it would be "inappropriate to the surroundings" and would "clash with modern houses of red brick".

Mr. Bowkett, the would be builder, wants to build a number of similar houses and perhaps one, for himself.

Mr. Bowkett's own view of his design is that with its gilt and white decorations, crystal chandeliers, marble fireplaces and concrete pilasters it would be "mature and restful to the eye".

ABNER

Correspondence

Architects' Benevolent Society

Dear Sir,—Early this year a letter appeared in the architectural papers advocating wider support of the A.B.S.; it suggested that each rise in salary and each new commission might be marked by a gift to the A.B.S.

As Christmas is getting near, shall every one of us count this year's score of new jobs and rises of salary, and send a contribution for each to the A.B.S.

Yours faithfully,

H. G. C. SPENCELY.

In Parliament

Rush with Housing Tenders

The Commons have made a very slow beginning with the Housing Subsidies Bill. On the first day in committee (December 1) they disposed of only one amendment, of the 60 or so already tabled.

It was an amendment fundamental to the whole Bill; since it proposed to continue the existing subsidies for houses of which tenders were approved before November 4, 1956, or of which the sites had been acquired before November 3, 1955—the date appointed in the Bill, which is a week after the announcement of the Government's revised policy on subsidies.

The complaint laid by the Opposition in support of this proposal was that local authorities had had extraordinarily short notice of what the Government intended to do, and to submit tenders or estimates that would rank for the existing higher subsidy, and this was bound to have sweeping effects on their housing programmes and finance.

The Minister's answer to this was that to give authorities 12 months' warning would be to offer them an almost irresistible temptation to approve tenders for enormous numbers of houses sufficient to keep them going for many years. In that way the purpose of the Bill would be frustrated.

One thousand in a day

Mr. Sandys supported his argument with some revealing figures. The Government's intention to introduce the Bill was announced on October 27. Between then and November 3, several local authorities had found it possible to rush through approvals of tenders at an abnormally high rate. One authority approved tenders for 1,000 houses in one day. If they were given 12 months the Bill might just as well be withdrawn. He emphasised that any tender submitted before November 3 which might have to be sent back for revision would qualify for the existing subsidy although final approval was not given until after that date. It was not the Government's intention to try and catch local authorities out by delaying tenders

and sending them back for revision. There were already 250,000 houses for which tenders had been approved before November 3. If the amendment were adopted the number might reach 500,000, many of which might not be built for more than three years.

Mr. Bevan derided the claim that the result of the Government's proposals would be that slum clearance would forge ahead, and asserted that the Minister was violating arrangements previously made with the local authorities.

The amendment was rejected by 217 votes to 172.

On Noise

On private members' day (December 2) the House had an opportunity of talking about noise. Sir Lionel Heald moved a motion noting with concern the detrimental effect of noise and vibration on health, well-being and efficiency, and urging the Government to give careful attention to the importance of research and education and to the need for more effective measures for the protection of the public.

For the Government, Sir Hugh

DRAWINGS BY A. S. G. BUTLER

IT is always interesting to see an architect take up the brush and the pencil and express himself and his view of life in a lighter and more transient medium than bricks and stones. So many architects have done so in the past, fewer do it now, but here is one who is putting his work before the public to share in his enjoyment of his own visual thought.

A. S. G. Butler is already well-known in the world of architecture, not only as a sensitive designer, but as the author and editor of the monumental record of *The Architecture of Sir Edwin Lutyens* and for his untiring work for the R.I.B.A. Library Committee in connection with the preservation of the Lutyens drawings collection now in their charge. A war book, *Recording Ruin*, and his biography of Josephine Butler, the reformer-philanthropist and his grandmother have also given Butler a high literary reputation in a much wider field. And, now, Andrew Butler, as he is known to his artist friends, appears as a very lively painter-draughtsman with considerable spontaneous power of expression.

His works in the one-man show at The Adams Gallery (24, Davies Street, W.1, open till the 22nd of December) are revealing in their rapid and poetical expression of mood and of the fixing of it through light, shade and colour. The drawings are either in pencil only or with a base of dark pencil sketching rendered in areas of transparent water-colour or body-colour. Some of these, especially those of English streams, are things to live with. A few small oil paintings among the thirty-eight exhibits are less spontaneous, though in at least two the same vital and strong feeling for the poetic core of landscape appears.

If the work has an affinity with the past it is, perhaps, with that of William James Müller and, in some of the water-colours, with that of H. B. Brabazon, though no comparison can, or should, obscure the individuality of Andrew Butler.

S. R. P.

Lucas-Tooth, Under-Secretary, Home Office, said it was generally impossible at major airports near large centres of population, especially London Airport, to avoid some disturbance from the noise of aircraft, whatever arrangements were made. The Building Research Station of the Department of Scientific and Industrial Research had carried out a survey of houses whose occupiers had complained of damage from low flying aircraft near London Airport. The view of the experts was that defects in the houses inspected were similar to those experienced in houses of similar construction in various parts of the country, and the passage of low flying aircraft had not contributed to the incidence of the defects nor their magnitude. He recognised that the local people had not accepted that report and had pressed for a statistical survey designed to show that houses of a similar value and construction situated near an airport had a shorter life than those situated elsewhere. To be of any value such a survey would have to be detailed and extensive, and the Home Secretary was of the opinion, in the absence of any valid scientific reason to suggest that such a survey would be useful, that he would not be justified in spending money on it.

The Research Station had been conducting for a number of years work on the protection of people from noise in buildings. The Station had been able to devise means to reduce the transmission of such noise, and had developed satisfactory methods of sound insulation for most existing forms of construction, and they were continuing their work to reduce the expense. There was also research being made into the measurement of noise levels within buildings from different types of aircraft, so that the size of this problem could be assessed.

The Government had taken advantage of these discoveries, but many aspects of public building had yet to be considered. The design of special types of buildings was only a special application of the general methods on which the Building Research Station had been working. The architects and buildings branch of the Ministry of Education had carried out research into the technical problems connected with the prevention of excessive noise inside schools, and had urged local education authorities to pay attention to them in designing the buildings. The siting of schools near airfields was a difficult question, but much could be done by consultations between the local authorities and the airfield authorities. Regional hospital boards,

planning authorities and architects did their best to minimise noise in hospitals, and inquiries had shown that there was evidence that much had been done.

The motion got tangled up with party tactics, and the House was "counted out".

Soviet Architects Congress

The Congress of Soviet Architects has elected a new board of 100 members, following recent criticisms. Alexander Vlassov just managed to obtain enough votes for re-election, but the former secretary G. Tradov and Arkadi Mordinov were not re-elected.

The Congress sent a message to the Central Committee of the Communist Party stating that they were deeply aware of the gravity of their mistakes and promising to correct them.

New Barbican 'Appeal'

The Minister of Housing and Local Government has accepted an appeal made to him by the New Barbican Committee against the decision of the Corporation of London regarding the proposed development of the "Barbican Site", the area bounded by Aldersgate Street, Barbican, Beech Street, Whitecross Street, Silk Street, Milton Street, Ropemaker Street, etc.

The Minister has instructed one of his Officers, Mr. S. J. Docking, M.A., B.Arch., A.R.I.B.A., to hold a local inquiry into the matter under appeal, at the South Court Room, Guildhall, E.C.2, on January 17, 1956, at 10.30 a.m.

Owners and occupiers of property who may be affected by the proposed development are to be informed by the Corporation that they may have an opportunity to state their case at the inquiry should they so desire.

Bernard Webb Studentship, 1955

The Bernard Webb Studentship for the historical and critical study of architecture, which is open to members of the Architectural Association and tenable under the auspices of the British School at Rome, has been awarded to Mr. Timothy G. Bidwell, A.R.I.B.A., A.A.Dip., who will study building materials used in medieval Italian architecture.

Tretol Competition

A selection of designs for The House for the Professional Man competition will be on view at the Building Centre, Store Street, from now until December 22.

CHANGE OF ADDRESS

Messrs. Clifford Culpin & Partner, F/A.R.I.B.A., A.M.T.P.I. have moved to 39 Doughty Street, W.C.1. Telephone number remains Chancery 5395.

COMING EVENTS

Town Planning Institute

December 8 at 6 p.m. General Meeting. Sir Patrick Abercrombie, M.A., D.Lit., F.R.I.B.A., F.I.L.A. (P.P.), will read a paper entitled, "Where Does Planning Stand Today?" At the Livingstone Hall, Broadway, S.W.1.

Royal Institute of British Architects

December 9-December 22. "The Preservation of Historic Buildings," an exhibition prepared by the Ministry of Works, Mondays-Fridays 10-7; Saturdays 10-5. At 66 Portland Place, W.1. Admission Free.

December 13 at 6 p.m. Joint Meeting of the R.I.B.A. and I.E.S. A paper on "Lighting in Buildings — Training and Practice," will be delivered by Derek Phillips, A.R.I.B.A., and will be followed by general discussion. At The Lighting Service Bureau, 2 Savoy Hill, W.C.2.

Institute of Landscape Architects

December 15 at 6.15 p.m. "Contemporary Work in the U.S.A.," by Brian Hackett. Aperitifs (tickets required by members and guests). At the Housing Centre, 13 Suffolk Street, S.W.1, in the Lecture Room.

The Institution of Production Engineers

December 15 at 6.30 p.m. "Britain's Energy Prospects," by Dr. G. H. Daniel, Chief Statistician, Ministry of Fuel and Power, at the Royal Institution, Albemarle Street, W.1. Application for tickets of admission to the meeting, and reprints of the Paper when available, may be made to the Secretary of the Institution of Production Engineers, 10 Chesterfield Street, W.1.

Society of Chemical Industry

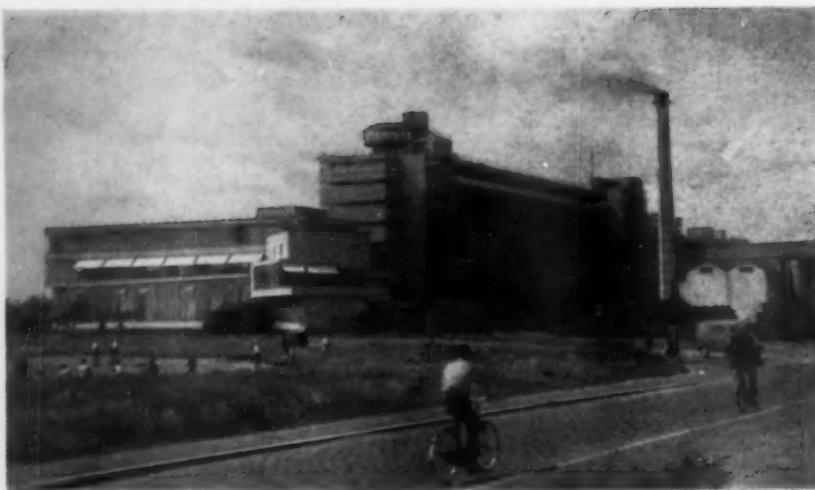
December 15. "New and Revised Test Methods." A number of Short Papers will be presented during an Afternoon Session commencing at 2.30 p.m. and an Evening Session at 6 p.m. At the Junior Institution of Engineers, Pepys House, 14 Rochester Row, S.W.1., in the Lecture Hall.

The Illuminating Engineering Society, Birmingham Centre

December 16 at 6 p.m. "Lighting Problems in Laboratories," by P. S. Crowther and W. H. Pritchard. At Regent House, St. Phillip's Place, Colmore Row, Birmingham.

BACK NUMBERS OF THE A. & B. N. WANTED

If any reader has back issues of No. 3921, Vol. 177 and 4007, Vol. 184 (February 11th, 1944 and October 5th, 1945) we should be grateful to receive them to send out to the City of Johannesburg Public Library to complete their volumes.



General view approaching the factory from Rotterdam.

THE VAN NELLE FACTORY

THE Van Nelle factory on the outskirts of Rotterdam, built in 1927-1930, has over the last twenty-five years been regarded as one of the outstanding modern factories in the world. From time to time, reports have been received of its condition and during the war years it was suggested that it had been destroyed by the German Air Force or had been altered structurally so as to become unrecognizable. A recent trip to Rotterdam, however, showed that the Van Nelle

factory is still as attractive to-day as it was when it was first completed. The accompanying photographs show that this fine building has withstood the war years and the use of a quarter of a century and still remains one of the outstanding examples of contemporary architecture in the world.

The factory consists of a group of buildings for the production of cigarettes, tea and coffee together with warehouses, offices, garage canteens and other minor buildings.

It is situated on a level site on the outskirts of Rotterdam adjoining a small canal. The whole site was carefully landscaped when the building was erected and now presents a most attractive appearance among the well-kept lawns and gardens by the water's edge. The main factory blocks are eight storeys high with mushroom slab reinforced concrete construction and glass curtain walls with thin solid panels giving an effect of extreme lightness in spite of the very considerable size of the building. The smaller buildings are constructed with an ordinary reinforced concrete frame and the treatment from unit to unit varies according to the use of the building concerned. The main impression is one of cleanliness and lightness and the huge areas of glass accentuate this aspect of the design.

In spite of twenty-five years of use and years of war-time neglect, the Van Nelle factory is still in an excellent condition. The building is equipped with a permanent rail track round the top of the main block from which cleaning cradles are suspended and these are in constant use for window cleaning and the general maintenance of the fabric. It is obvious that the provision of this permanent cleaning installation has been greatly appreciated and put to good use, for even now the buildings give no indication of their age and are in an exceptional state of preservation. Unless one knew the age of the building, few people would hazard a guess that this factory had been in use for a quarter of a century. The whole design and detailing of the building is surprisingly fresh and undated and there is no doubt that even after another twenty-five years the Van Nelle factory will still be regarded as a modern building of the highest possible order. One can safely say that this factory is one of the classic buildings of the modern movement and one every architectural student should be encouraged to study in detail.

The architects were J. A. Brinkman and L. C. van der Vlugt.

EDWARD D. MILLS



The rear of the tobacco factory with the coffee factory to the left.



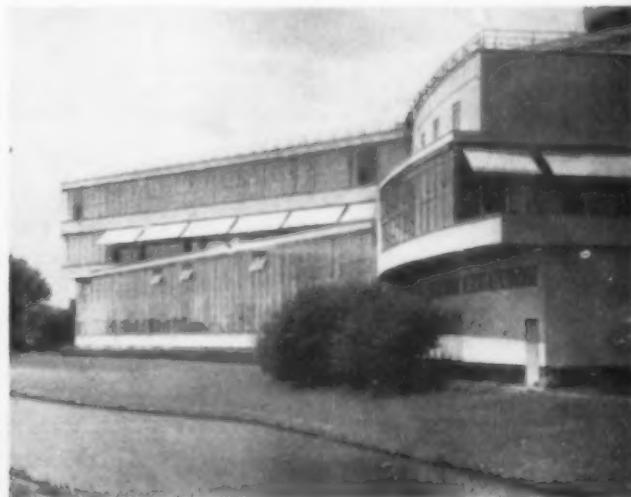
Gatekeeper's lodge and works entrance.



Rear of the tobacco factory with office block in foreground.



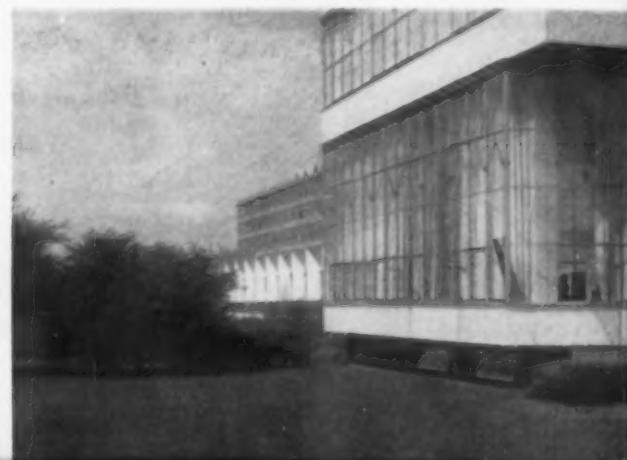
Tobacco factory with first floor bridge to canteen on the left. (Note the cleaning cradle in the centre of the block.)



Canteen and office building seen across the small canal. (The permanent cradle rail runs right round the buildings at roof level.)

Photos: Edward D. Mills, F.R.I.B.A.

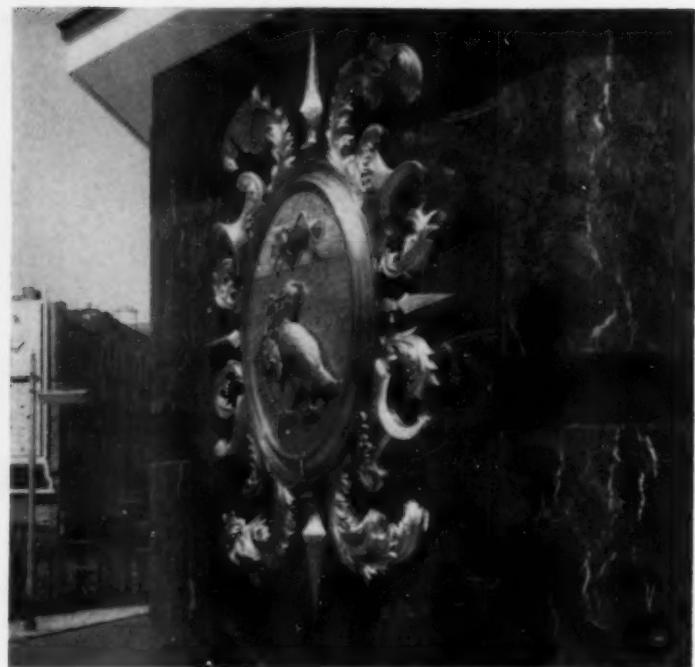
The multi-storey tobacco factory with the boiler house on the right and canteen on the left.



A corner of the office building.

**MARTINS
BANK
Tottenham Court Rd.
London, W.I**

architects :
BRIDGWATER AND SHEPHEARD



*Designed by Robin
and Christopher Ironside*

THE site for this new bank is on a corner of the reconstructed war-damaged Bedford Corner Hotel. The ground floor and basement was acquired from the owners and occupier of the hotel by the Bank who required work space for Manager, three cashiers and eleven clerks; an enquiry counter and the usual ancillary accommodation.

construction and finishes

The marble facing for the two facades is in Tippsiorie with slightly darker bands in Vert Stella. The window reveals are lined with Botticino and the plinth with Belgian Black Granite. The windows are in metal painted white. The grilles are in bronze, and the arms over the main entrance, designed by Robin and

Christopher Ironside, are in bronze and silver bronze. The entrance door and lobby are in teak.

The floor of the banking hall is in Belgian Fossil and Mazano marble, with a Belgian Fossil marble skirting throughout, and Botticino lining the window reveals. The columns are faced with Ashburton marble with satin chrome collars at top and bottom. Ashburton marble was also used for the cills in the window openings in which are inlaid black leather writing pads.

All the walls of the banking hall are lined from floor to ceiling with mottled English Oak veneered in 9 in wide slipped strips.

The counter top is Australian Black Bean and the front in Claro Walnut with a strip of Macassar Ebony under the counter. The clerks' desks have Australian Black Bean tops, but otherwise are finished in solid walnut. On the underside of the first floor was a large number of drain and service pipes serving the hotel above, and these have been covered with a false ceiling, designed so that hinged panels can be easily opened for access to these pipes.

The lobby is lined with teak externally, and internally with oak to match the wall panelling, with black leather inlay and corners and capping in satin chrome.

At the end of the banking hall is hung a tapestry designed by Sax Shaw from preliminary drawings by Peter Sheppard and woven by The Edinburgh Tapestry Company Ltd. The design is a composition of important and historic buildings of the immediate Bloomsbury neighbourhood.

The Manager's room has the wall behind the

Before conversion



General Contractor:**Mullen & Lumsden Ltd.****Sub-contractors:**

Bank fittings, counter, clerks' desks,
Manager's desk, wall panelling, etc.:
Mullen & Lumsden Ltd.

Basement floor:

General Asphalt Co. Ltd.

Bronze grilles, satin chrome radiator panels,
ceilings for columns:
The Birmingham Guild Ltd.

Carpets, curtains and writing pads:
Heals Contracts Ltd.

Chairs:

Messrs. Hille Ltd.

Electrical installation and light fittings:
Troughton & Young Ltd.

Electric clocks:
Synchronome Co. Ltd.

Fascia lettering:
The Lettering Centre.

Glass Screen, mirror:
London Sand Blast Decorative Glass
Works.

Ironmongery and arms over main entrance:
Comyn Ching & Co.

Lift:
Hammond & Champness.Light fittings:
General Electric Co. Ltd.

Limoleum in clerks' space:
Korkoid Decorative Floors.

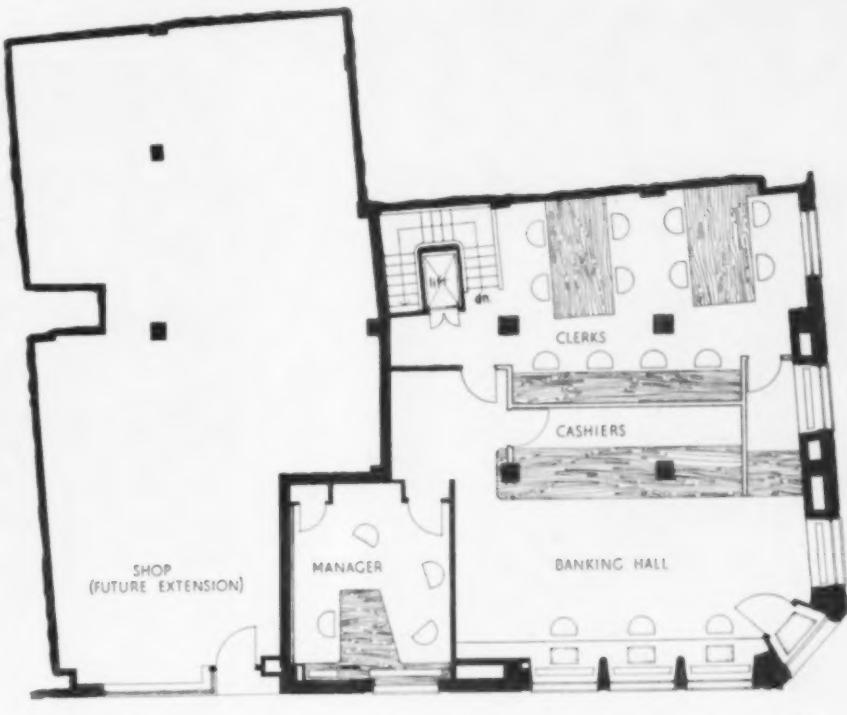
Marble:
J. Whitehead & Sons.

Night safe and strong room:
The Chatwood Safe Co. Ltd.

Paint:
Thos. Parsons & Son.

Plumbing, heating, ventilating:
Ellis Ltd.

Reinforced concrete:
British Reinforced Concrete Ltd.



PLANS SCALE: 1 IN - 12 FT



Pictures overleaf



Customers' writing space

Banking Hall, showing tapestry by Sax Shaw and Peter Shepheard —



Cashiers' Counter





Manager's office

Martins Bank, Tottenham Court Road

Continued from p. 738

Manager's desk lined in oak similar to that in the banking hall and one wall lined with walnut bookcases, cupboards, etc., to a height of 7ft with a large mirror above, this giving an impression of greater space in a rather small room. The desk and shelf and radiator fitting are in walnut with black leather top. The carpet is patterned in black and olive green, and the curtains are a greenish yellow.

Clerks' counter





The group from south-east

SENIOR POLICE HOUSING

Shenley Lane

for the City of Birmingham

architects: A. G. SHEPPARD FIDLER,
City Architect

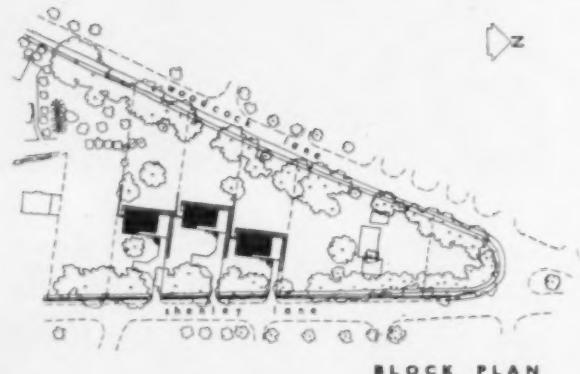
J. R. SHERIDAN-SHEDDEN,
Deputy City Architect

J. W. BODDY,
Principal Architect (Housing)

assistant architects: F. M. JONES
G. WALTHO
F. W. PARKINSON

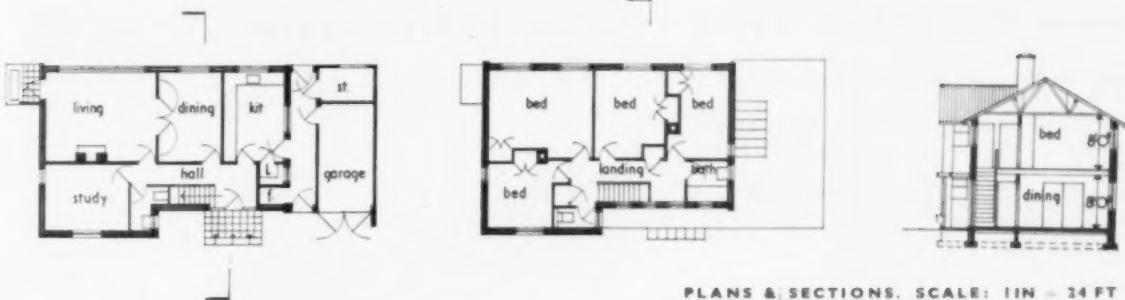
THIS group of Police Houses is situated in a copse at the crest of a hill near the City's South-western boundary. The narrow wedged shaped site of $\frac{1}{2}$ of an acre is well screened by trees from the lanes running along its two main boundaries.

There are three houses in the scheme, of which the largest has a floor area of approximately 1,500 square feet and the others are somewhat smaller. All have good sized garages and external stores, which have been used to provide the group with a strong horizontal link.



The aim in planning these houses was to combine an open character with maximum privacy. Double swing doors are used between the living and dining rooms, and the rear porches, combined with fencing, screen the living portions of the houses from being overlooked.

The garages have flat timber felted roofs, with a wide eaves overhang which has been carried across the front of the houses to combine with open canopies over the front doors, supported on tubular steel columns. Further horizontal emphasis is provided by flower



PLANS & SECTIONS. SCALE: 1 IN = 24 FT

boxes, bracketed across the front face of the columns. These indicate the correct approach to the houses from the forecourt car drives, acting as a barrier to short cuts across the lawns.

The external walls to both houses and outbuildings are finished in 2½ in facing bricks, except the porch area and the ground floor to the rear of the houses, both of which are Tyrolean rendered. Steel framed windows are used throughout. In general, these have metal sub-frames and cills, but these adjoining rendered areas are fitted direct into pre-cast stone surrounds. The large windows to the living rooms are composites, built up with standard "Z" types, with side lights. The external doors are purpose designed. The 30° pitch gable roofs are covered with hand-made double-Roman clay tiles.

CONSTRUCTION AND FINISHES

In the larger house hot water and partial central heating are provided by an insulated domestic boiler, while a convector-type fireplace in the living room also heats the adjoining study. Hot water to the other houses is provided from back boilers to slow combustion grates. All the houses have solid ground floors which are finished in red granolithic in the kitchens, and thermoplastic tiles elsewhere (an extended colour range being used in the living and dining rooms and in

the hall). Upper floors are boarded; standard painted flush internal doors are used throughout.

The external facing brickwork is a warm terra-cotta, and the roofs of a darker tone. Tyrolean rendered wall surfaces are oyster pink. External doors are painted in bright colours, and the tubular supports to the front porches are bright yellow. Windows and external trim generally are painted off-white, while the flower boxes at the entrances are left the natural untreated colour of the wood. Internal colour schemes are at the choice of the occupier.

SPECIAL DETAILS

The external cavity wall thicknesses to the front and rear elevations of the houses are varied from 10½ in on the ground floor and 12 in on the first floor in order to mask the edge of the Tyrolean rendering and to give a slight horizontal shadow line.

B.M.A. plates are fitted to the stall boards on either side of the front doors to take the letter-plates, and combined bell push and incised enamelled house numbers respectively. The flower boxes are made of Western Red Cedar, and have no metal linings, the base boards being slatted to provide adequate drainage.

The combined Contract sums for the three houses, with their siteworks, but excluding landscaping, was £10,691 15s 0d.

West elevation



Senior Police Housing, Shenley Lane, Birmingham

Quantity Surveyors: City Architect's Department

General Contractors: Alfred Langley Ltd.

Subcontractors:

Bricks (facings):
Kings Norton Brick Co. Ltd.

Boiler (domestic):
Aga Heat Ltd.

Doors (flush):
Hollis Bros. Ltd.

Electrical Installation:
Rex Bros. Ltd.

Fireplaces:
Radiation Ltd.

Flooring (Thermoplastic):
Marley Tile Co. Ltd.

Ironmongery:
Baldwins (Birmingham) Ltd

Jewelry and Fittings:
Sharp Bros. and Knight.

Point:
Walpamur Co. Ltd.

Painting and Decorating:
H. Muckle & Son.

Plastering:

F. R. Whitehead.

Plumbing and Heating:
H. W. Bott & Son Ltd.

Radiators:

Crane Ltd.

Reconstructed Stone:
Tarmac Ltd.

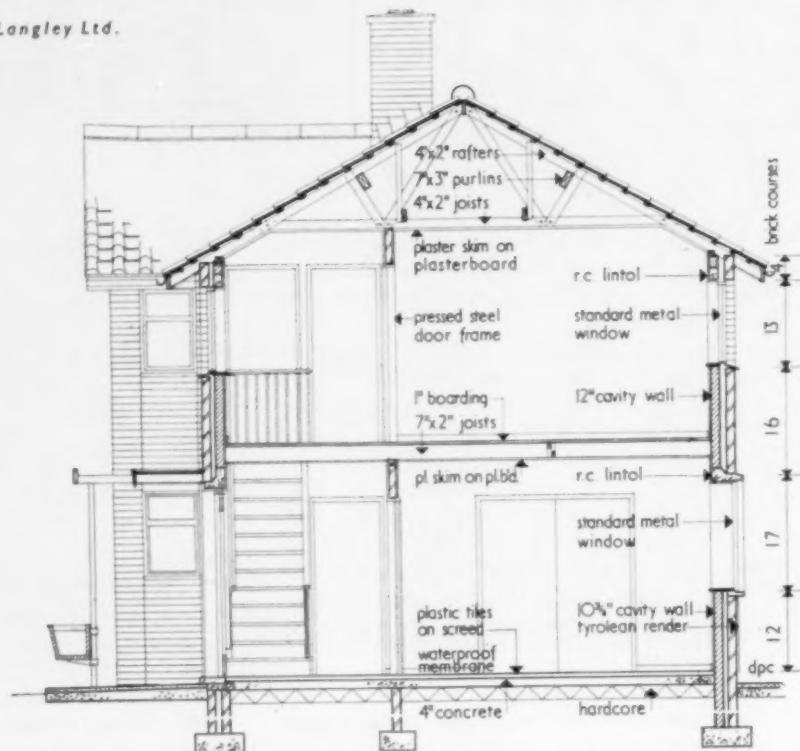
Rendering (Tyrolean):
Cement Marketing Co. Ltd.

Roof Tiles:
Colthurst Symons & Co. Ltd.

Roof Tiling:
J. Wormell (Roofing) Ltd.

Roofing Felt:
Ruberoid Co. Ltd.

Windows:
Henry Hope & Sons Ltd.



SCALE: 1 IN - 6 FT





From West

SHARD END POLICE STATION for the City of Birmingham

architects: A. G. SHEPPARD FIDLER, City Architect
 J. R. SHERIDAN-SHEDDEN, Deputy City Architect
 R. G. MORGAN, Principal Architect
 General Section
 G. B. GRIFFITHS, Group Architect
 W. M. LADBROKE, Assistant Architect



THIS District Police Station, together with a pair of Police Cottages, occupies a corner site of 0.4 acre near the Neighbourhood Centre of the City of Birmingham's Shard End Housing Estate.

The "L" shaped Station block, two-storeys in height, is in load-bearing brick construction with pre-cast concrete beam floors and *in situ* concrete stair cases.

All the office and staff accommodation is on the ground floor of the building, which is centrally heated from a boiler house in the basement, while the upper floor is occupied by three self-contained Police flats, served from separate entrances.

Central heating has not been extended to the flats, which are equipped with individual heating appliances.

To harmonize with the adjoining Corporation housing, the building is domestic in scale and treatment, though the official accommodation has been given a slightly more formal character to mark its function.

Thus all the ground floor windows have artificial stone surrounds, picture windows to the Recreation Room have rendered mullions, and are linked with a single stone frame, while the main Public entrance from Packington Avenue is accentuated both by landscape treatment and by the Police signs in blue neon lettering above the Porch canopy.

Planning

The planning of the Station combines its various functions while avoiding cross circulation.

Flanking the Main Entrance Hall are an Interview Room and a Waiting Room for the use of the public, linked with the Inspector's Office and General Office Suites.

Behind the General Office are the Charge Area and two cells, served by a separate rear entrance. This rear entrance also serves the Staff Accommodation, situated in the wing fronting the side road.

The introduction of a self-contained entrance and

Shard End Police Station

staircase hall to the flats midway along this wing, provides a useful planning buffer between the Canteen and the Inspector's suite.

To the rear of the Building is the Station Yard, containing a garage and washdown for two cars, a store for twelve bicycles, and a single storey block containing reserve telephones and also two kennels for stray dogs, with reinforced concrete roof and walls in Quetta bond.

Materials and Finishes

The Station is faced in pale yellow brick with a russet-coloured brick plinth. Reconstructed stonework in Portland stone finish is hand-tooled in the flanking jambs to the entrance hall, and smooth surfaced elsewhere. The panels between the canteen windows are rendered in grey Tyrolean Stick-B. The roof is in heather toned sandfaced plain tiling.

Internal walls and ceilings to the outbuildings and cells and drying room are finished in a smooth white polyvinyl compound applied direct to the fair-face brickwork and concrete ceiling soffits. The remaining internal surfaces are plastered and are decorated with emulsion paint in colours selected from the Archrome range. Small areas of patterned wallpaper used at focal points.

Floor Finishes

On the ground floor the main entrance hall is paved in light-oatmeal terrazzo with ebonite parting strips. The kitchen and cloakrooms are quarry tiled, the cells and cell corridor have granolithic floors, and the remaining floor areas are covered in black or grey battleship linoleum.

The same linoleum is used for the flats apart from the kitchen floors, which are tiled in 4in x 4in red Ruabon tiles. The entrance halls and staircases to the flats are surfaced in non-slip granolithic.

Special Fittings and Equipment

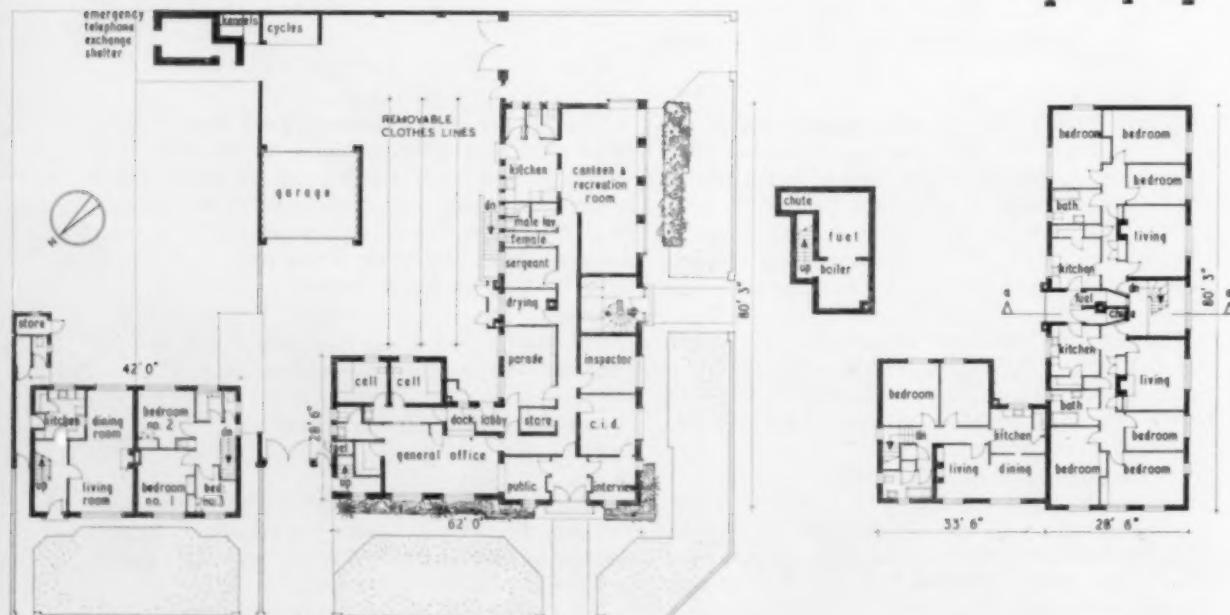
Simple refuse chutes have been introduced in the flats as these had to be virtually isolated from the Station Yard. From lift-up lids built into the kitchen fittings at work top level galvanised metal trunkings are run within a flue to discharge over open bins in covered enclosures at yard level.

Equipment for the flats includes built-in bookcases, integral with the living room fire surrounds, and a special tradesmen's delivery fitting in the staircase hall. A special design was also prepared for the Public Enquiry Counter in the Station.

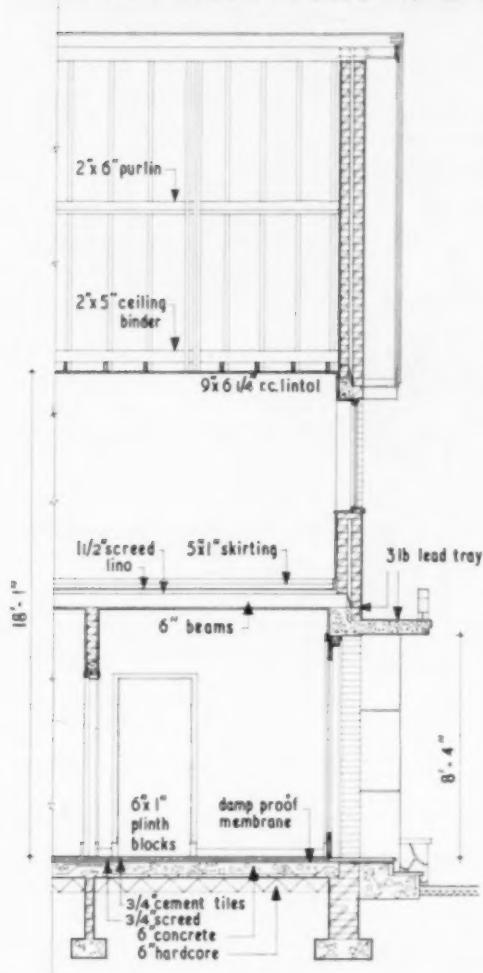
External landscaping comprises stone paving, lawns and planting with shrubs and with flowers in raised boxes of Gornal Stone.

The all-in cost of the scheme (tender figure) was £27,767 0s 0d.

PLANS & SECTIONS. SCALE: 1IN = 32 FT



SECTION BELOW: SCALE 1 IN = 6 FT



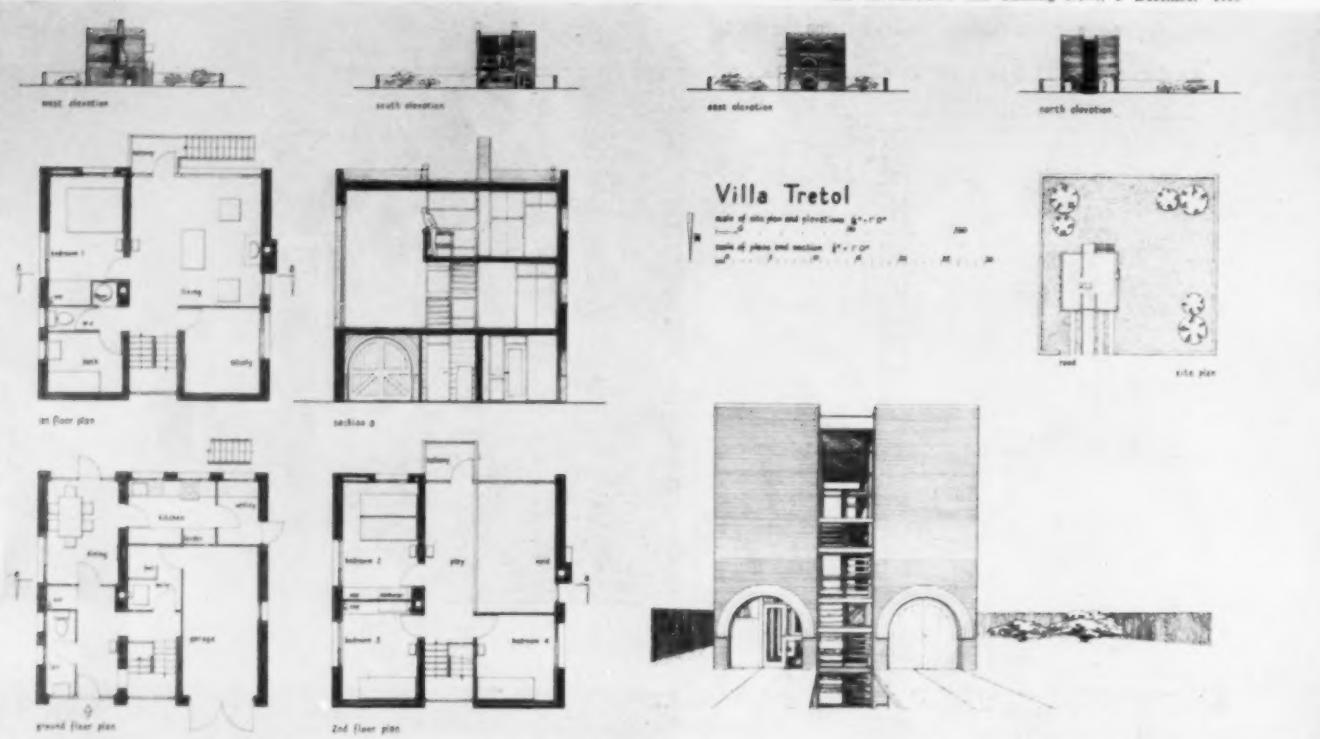
Interior, canteen



Interior, general office

Staircase hall to flats**General Contractors:** Geo. Stubbings Ltd.**Subcontractors:**

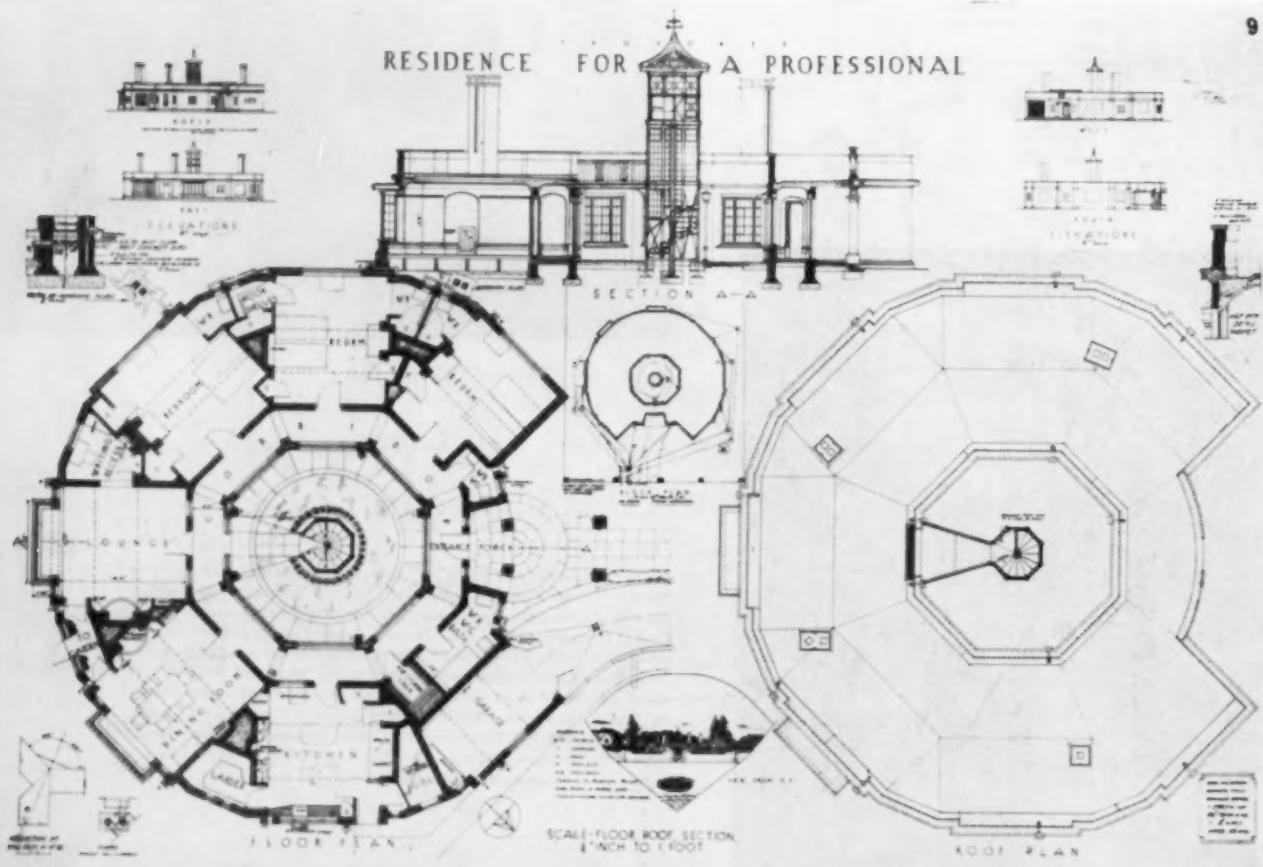
Asphalt: Birmingham Asphalt Co. Ltd. Bricks (facings): London Brick Co. Ltd.; (plinth): Webster Hemming & Sons Ltd. Electrical Services: Stuart Electrical Co. Ltd. Electric Signs: Neon Excelde Ltd. Floors, precast concrete beams: The Trussed Concrete Steel Co. Ltd. Tarrazzo: Raponi Flooring Co. Ltd. Granolithic Paving: P. Flowers Ltd. Heating and Hot Water Services: J. S. Wright & Co. Ltd. Ironmongery and Cloakroom Fittings: Parker, Winder & Achurch Ltd. Joinery and Special Fittings: Geo. Stubbings Ltd. Paint: Docker Brothers. Plastering: Hill & Martin Ltd. Polyvinyl Finishes (internal): Vitretek Ltd. Roofing Tiles: The Metallic Tile Co. (Rowley Bros.) Ltd. Sanitary Fittings: Rowe Bros. & Co. Ltd. Stonework (artificial): Tarmac Ltd. Wallpapers: Arthur Sanderson & Sons Ltd. Windows: Henry Hope & Sons Ltd.



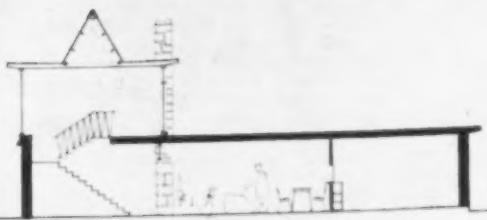
design by John Birchell

TRETOL COMPETITION

design by G. T. Hodges

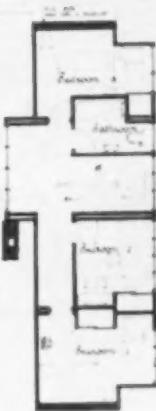


"THE HOUSE FOR THE PROFESSIONAL MAN"

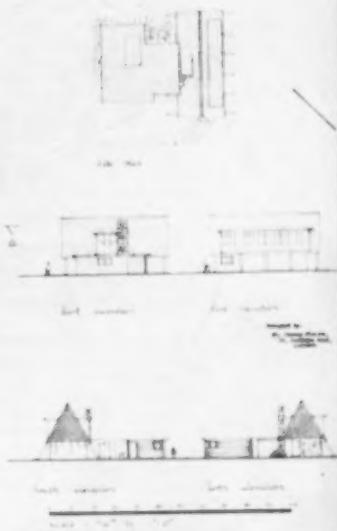


Ground - floor plan

Scale 1:100 ft.



First + Second floor



design by Cosimo Pacitti

H.E. the Burmese Ambassador, Mr. Maung Kyin, examining the model of the Assembly Hall roof, Rangoon University, on the T.D.A. stand at the Building Exhibition. Mr. R. R. Bye, F.R.I.C.S., of Raglan Squire & Partners, architects for the University, is explaining a point.



HIGH MARKET designed for Pilkington Brothers Ltd.

by GORDON and ELEANOR MICHELL, A.A. Dipl. (Hons.), A.R.I.B.A.



The architects were asked by the Glass Age Development Committee, which is sponsored by Pilkington Brothers of St. Helens and consists of G. A. Jellicoe, F.R.I.B.A., Edward D. Mills, F.R.I.B.A., and Ove Arup and Partners, to design a shopping centre to serve the population of Birmingham, West Bromwich, Wolverhampton, Dudley, Walsall, Smethwick, and Oldbury, bearing in mind the possible development of traffic and housing facilities in 50 years' time.

This imaginary High Market will be 2,000 ft long, 400 ft wide and its four storeys will contain shops, cinemas, a bathing pool and an exhibition centre in addition to service departments (packaging, delivery, etc.) and parking space for 3,500 cars, lorries, and helicopters.

The Glass Age Development Committee was formed to suggest new and practical solutions to the future problems of town and country planning and has already replanned the Soho area of London.

The explanatory notes below are by Mr. Gordon Michell.

OUR towns have not been designed to cope with the enormous problems of car and pedestrian traffic, of shop servicing and distribution of goods. New ways must be found to overcome these difficulties.

The Americans, since the war, have been putting up buildings which they consider get over many of these problems. They call them regional shopping centres, sometimes district or shopping centres, or country markets which is a misleading term as they bear absolutely no comparison with the small town country market as we know it in this country. They build, on very carefully selected sites, and some distance from a main centre, a vast complex of one storey and sometimes two storey shops sited in the middle of a large piece of flat ground giving ample space for cars to park in thousands all around the centre. A centre called "Shoppers World" 19 miles outside Boston is just one of these, having 1½ million sq ft of shopping space, and enough site left around its buildings to allow parking on flat ground for some 6,000 cars. This centre is approached at high speed along main highways which allow comfortable cruising speeds of 60 and 70 miles an hour,

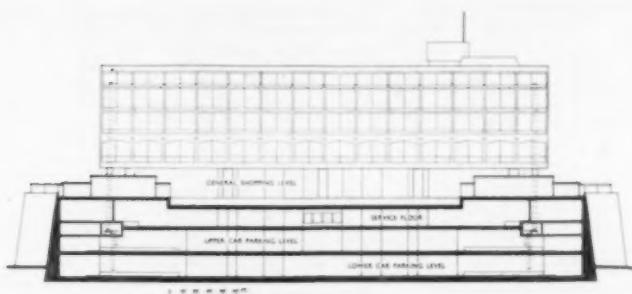
and it is, therefore, quicker to drive the 15 or 20 miles to one of these centres on a fast road than it is to negotiate the congested streets of the down town centre.

We have recognised that American projects contain qualities which, of course, will improve the lot of the shopper and thereby make shopping more enjoyable. There are many aspects of American shopping, however, which could be further improved upon. High Market on the high hills just North West of Birmingham and Smethwick attempts to provide a great shopping centre to which people of the Black Country could come and where they would find things so organised that shopping became a real pleasure.

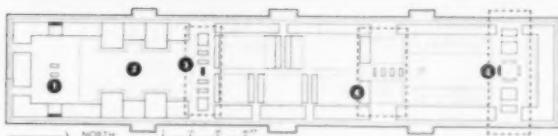
This is not simply an architectural problem or a piece of real estate development, but very much an economic problem and a solution is bound to be the result of very well integrated team work from architects, planners, economists, property managers, financiers, real estate organisers, and so on. None of these people could really start their own particular section of the work until a complete social survey has been carried out and an economic survey had been completed which showed the

numbers of shoppers who might be served in the area, their shopping needs and habits and how they might be expected to approach any such centre, and so on. None of these surveys have of course been carried out for this area and we, as the architects of this scheme, have been asked to start on the assumption that the surveys have in fact been made, that the economics of the scheme are sound, and that there is a real need, therefore, for a centre such as this in the district. High Market will supplement the shopping facilities of all the smaller and larger centres of this part of the Black Country and will draw people from the larger centres like Wolverhampton and Birmingham, West Bromwich, and Wednesbury just as much as from the smaller centres of Brades Village and Quarry Bank and Cradley Heath. High Market will not only encourage new shopowners but will also encourage existing shopowners in neighbouring centres to open an additional store. Possibly some stores may move out of the overcrowded centres to make way for local clearance and open spaces to be put in hand.

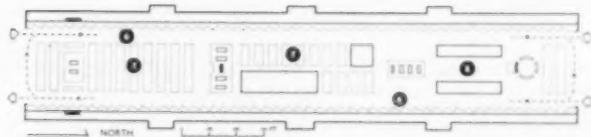
And since this is a project for 50 years hence, it is fair to assume that transport conditions



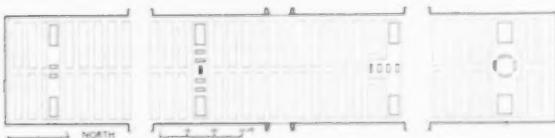
Section showing shops on the top level, facilities for packing and parceling on the next level, and space for parking cars, buses and lorries on the ground and first floors. There is parking accommodation for 3,500 vehicles, including helicopters.



Plan of the shopping level. (1) The covered market place; (2) The boating pool; (3) Department Store; (4) Cinema and Restaurant; (5) Department Store.

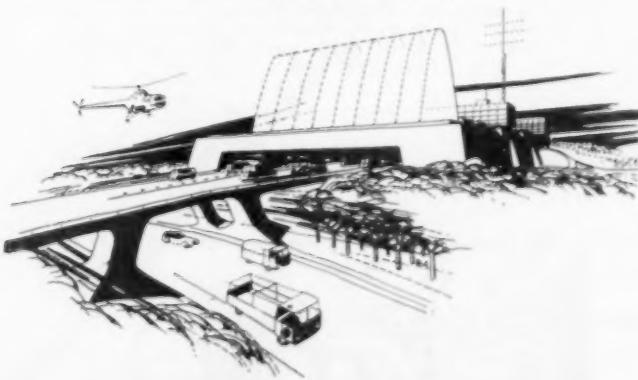


Plan of the Service Floor. The figure (6) denotes unloading bays, (7) employees' car parking and (8) the truck maintenance area.



Above : Lower Parking Floor level.

Below : The service entrance to High Market at the south end. Below is the road leading to the entrance of the car park which is to be found on the other side of the building.



and indeed the means of transport, will have improved. High Market is, therefore, approached by helicopter or high speed monorail, such as is now being developed in Germany, and at the same time roads have been modernised so that several high speed and wide main highways link the centre to the trunk road network running through the Black Country.

The site we eventually chose for High Market is on top of Turner's Hill and Darby's Hill just above Oldbury. We chose this site for several reasons: first, because it is the highest ground in the district and the building of this size would, therefore, be visible to the whole area from which the centre is intended to draw people. Second, the views from the top of this hill are fascinating. And the granite quarries which are at present being worked and which it is assumed will have been worked out within the next 50 years, make the approach and again the view even more dramatic and offer enormous possibilities for exciting landscaping.

Any building which goes on the top of these two hills must, therefore, be magnificent in conception and must continue the grandeur and scale of the landscape. And yet of course one of the very requirements of shopping centres is that they must essentially be on a very human scale, so there has been a problem in that externally the building had to be huge, simple and powerful, and internally it had to come down to a scale easily understood.

The other important problem was to overcome the very complex circulation. The design must cater for all the various methods of public-private transport; for goods vehicles delivering goods to the stores below the shops; for shoppers within the centre; and finally for shoppers' parcels which have to be returned for collection to the right pick-up stations. None of these different types of circulation must be allowed to conflict and the analysis of all these problems suggested the solution.

Our answer is to join the two hilltops, Darby's Hill and Turner's Hill together, with a slab 2,000ft long and 400ft wide. Between the two hills and below this horizontal slab the valley dips down so that in the centre of the valley there is 70ft difference between the ground level and the slab connecting the two hilltops. It is in this height that we plan to put two floors of public car parks and to make the general entrances for all shoppers. This means that private cars and buses can approach the centre on natural ground levels and can drive straight in to one of the car parks. The slab which joins the two hills together forms the roadway for the goods vehicles and it is on this level that the stores to the shops are built, and above these stores comes another slab of the same length, which is the main shopping level. So briefly the scheme consists of four main levels with the shops and arcades at the top, underneath that the shop stores and the goods delivery and employees' car parking and beneath that two levels of car parking.

Now a shopper will arrive, let us suppose in this instance in a car, and he will drive into one of the two levels of car parking. He will park his car, walk never more than 200ft to the nearest lift. He will have been given in parking a card bearing his car park colour, together with a number, and both of these are vital in the organisation of the parcel pick-up scheme which makes it unnecessary for him to carry all his purchases with him. He enters then the lift nearest his car park and is borne upwards very rapidly non-stop through the service floor to the main shopping level. It is on this level that the main breakdown of the scale from the largeness of the outside to the intimacy of the inside takes place.

High Market

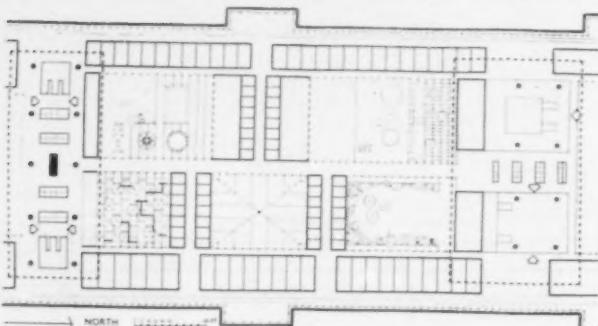
Basically, the centre is composed of a band of one storey shops varying in depth to give maximum flexibility running all the way round the centre, so that you get two bands of shops 2,000ft long on the long sides, joined at the other end by a band 499ft long. These two bands of shops are directly over the individual stores on the floor below where a simple one-man circulation of goods vehicles going smoothly round the centre was an absolute necessity. This one storey roof line runs quite unbroken round all sides of the centre, and then we set out to create smaller squares and courts by placing larger blocks across running from side to side across the 400ft width. The large squares thus created are again treated in different ways in order to get the maximum variation with a maximum flexibility in shop layout and to give different interesting atmospheres to each square.

So that at the North end, for example, we have the main square, on two sides of which there are the one storey band of shops, and the other two sides of the square are formed by a higher block of a department store here and on this side would be the administration offices of the centre, a cinema, a restaurant and an area which would be devoted to exhibition space. It is in this square that we visualise quite large trees being planted and for this ample soil pits have been allowed from the floor below. On the ground of the square amongst the trunks of these trees would be flower sellers, and in the centre of the square is a flat paved place where people could gather to talk and gossip and where maybe on occasions a brass band concert could be given. And also from this flat paved area rises the mast which is the nerve centre of the High Market, keeping it in telephonic, telegraphic and televisual communication with the rest of the world. And, at the foot of the mast more for the children than anything else, there is a large screen which would show you by means of a powerful revolving periscope views out into the country beyond the High Market.

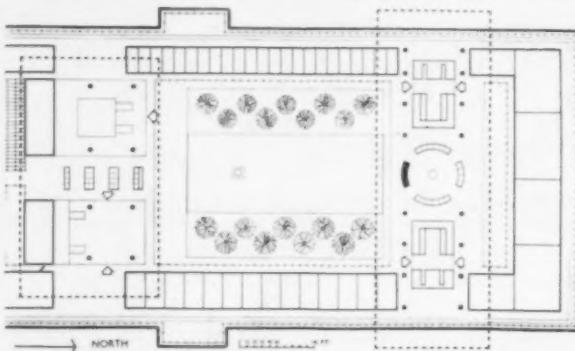
Now coming from this square one moves under the Administration Centre and enters an area which is broken down in scale much more by a series of arcades similar to the shopping arcades one finds in towns up and down the country like our own Burlington Arcade here in London. In this way, we create a number of very small, intimate little shops all separated from the next block by areas which would be given over to a creche; a playground for older children; a cafe which will be out in the open during the fine weather and then would withdraw itself into part of the building during the wet weather; a great palm house; and finally some more trees and seats where people can go and sit and talk, at the same time as looking at one or two murals which would be part of a permanent exhibition. You walk through this particular area under covered ways all the time and at the end of this covered way you come under another of the high blocks which marks the end of this arcade square and brings you through to a much more popular type of shopping area with a boating pool in the centre.

During the winter it would be possible to freeze this pool so that ice skating could take place. This last square is created by a high block which would again be given over to a large popular store, and at the other end by great parabolic arches covered with glass in which there would be space for a market with barrows and stalls. On either side again we get the one storey band of shops broken on both sides by two storey shops for the rather more popular type of store.

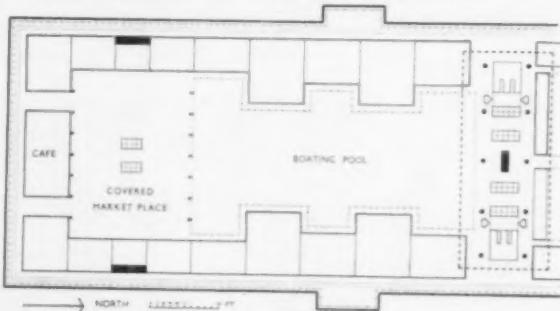
Articulated platforms which move continuously around the building in opposite directions



The central area of High Market. This is divided into five open spaces by glazed arcades designed to accommodate small shops. The larger single storeyed shops continue down each side and in the centre there is a covered way that links the ends of the arcades. The whole shopping area could be enclosed and air-conditioned during the winter months.



The Main Square of the High Market. On the north side the Square is bounded by a six-floor Department Store and on the south by a building that accommodates a cinema and a restaurant. Open arcades, with single storeyed shops, continue on either side and can be enclosed during the winter. The larger shops at the north end could accommodate administrative offices, a Post Office and Banks.



The Water Market, situated at the south end of High Market. Shopping arcades surround the Boating Pool, part of which could be reserved for bathing. Adjacent to the pool is a high, glazed market place which could shelter open stalls and barrows. The shops on either side of the pool are alternately single or double storeyed and could accommodate branches of popular chain stores. At the north end is a four-storeyed Department Store.



So basically the scheme consists of this one storey band of shops going all the way round broken down by higher blocks spanning from one side to the other, breaking the length down into three smaller areas all of which are treated differently. This one storey band of shops varies in depth according to the requirements of different shops, and all the shops found there have windows looking out into the centre and, on the other side, a window which looks out towards the open country. Immediately next to the glass area on the display window on either side is a wide covered walk-way, and beyond that on the outside of the centre are two moving belts moving around the centre in different directions. All the covered ways and arcades are to be enclosed during the winter with removable glazed panels and the whole centre, shops as well as circulation space, will be air conditioned and heated.

When shoppers arrive they were given an individual number and a colour to correspond with their nearest lift. Their purchases through the High Market, except those bought in the covered market, and enclosed arcades, are marked with their colour and number and placed in the shop's own vertical parcel chute. The parcels are taken down the chute in continuous bucket lifts and land on a conveyor belt which moves the whole way round the building. At eight points on this belt, which are exactly above the twelve pick-up stations in the car parks, an attendant takes the appropriately coloured parcels off the belt and puts them into chutes for pick-up stations below. There they are sorted into numbered pigeon holes and collected by the customers as they return home. All payment of course has to take place at the time of purchase.

So much for the inside of High Market. Outside we aim at the creation of a large scale recreation area all round. This is afforded by the existing golf course on the west side of the building and the rest of this plateau would be laid out for football, cricket and other games. Under this plateau the Netherton underground canal runs straight for 1½ miles, and we propose to connect this to the flooded quarries, thus linking them with the whole canal system to the North of the building. On the other side, as the nearby quarries become worked out, they would be flooded and the edges planted, and an exciting landscape would be created for walking and boating. This whole area would be accessible by car with car parks concealed in lower quarries and by a miniature railway which would start from an underground station below the central car park entrance.



The interior of one of the closed arcades. The small shops on each side rise to a greater internal height than the arcade, enabling them to have clerestory lighting in the front over the arcade roof. Unlike the other shops in High Market, they have no basement stores and are serviced by communal lifts at the ends of the arcades.



Looking north across the Square to the large Department Store. In the foreground is the public viewing panel where shoppers can view the whole of the surrounding countryside.



The open arcades, with the covered, glazed market place beyond the pool. The open arcades can be closed in during the winter months by removable glazed screens and the whole shopping area would then become air-conditioned. In winter the pool would be frozen over for skating.

The Development of the Fired Earth Brick

APAPER read to the Ceramic Society at the time of the Building Exhibition by B. Butterworth, B.Sc., of the Building Research Station and D. Foster, A.R.I.B.A., deserves the most careful consideration by architects, brick manufacturers and builders. The implications of this thesis are far reaching. In essence this paper states that the standard brick is now an uneconomical building material; it is expensive to lay compared with other competitive units; it is a poor insulator; and it offers insufficient resistance to rain penetration except when built in cavity walling — a form of walling which, with its thin outer skin, may not be structurally strong enough for any but relatively small buildings.

The alternative put forward by the authors of the paper is a larger than standard brick, comparable in size to what are called building blocks, and perforated to reduce weight and increase resistance to moisture penetration.

Other countries — Germany, America and in particular Switzerland — have already carried out the necessary research and experimental work and are now using the larger brick commercially. Brickworks have installed the necessary new plant and designers have accepted the new bricks both as structurally sound units for large buildings and as a facing material. In this country the B.R.S. are now carrying out research and experiment with the large perforated brick.

Is there a market for such a unit in this country? Will designers, accustomed to and nurtured in a brick tradition founded on a brick size which has not altered through centuries — accept a larger unit? If a demand arose would brick manufacturers respond or to put it another way could they afford the necessary alterations to plant which such a change would involve?

Apart from these practical considerations, and there are many more, would sentiment stand in the way of progress? For these is little doubt that if the proposals for using a larger brick were found acceptable by the building industry and the architectural profession the standard brick would become obsolete in a very short time.

Mr. Butterworth's views are not to be taken lightly. He has made a very careful study of the problems to be faced. He sees the difficulties. Yet he says "the Brick Industry must adapt

or die out." Mr. Butterworth suggests that the disadvantages of the standard brick are only just being found out in this country. One reason for this is that since (and only since) 1945 the increasing scarcity and cost of fuel and the appearance of the Post War Building Studies have focussed attention on the importance of insulation.

In principle the disadvantages of the standard solid brick can be overcome by using perforated bricks of larger than standard size, designed to be laid with a discontinuous mortar joint. Larger units enable a greater area of wall to be laid with a given effort; perforation reduces the weight and improves the insulation; the interrupted joint can give adequate resistance to rain penetration.

In practice, however, there are many problems and Mr. Butterworth says "it is no accident that the majority of new designs of bricks and blocks patented during the last hundred years have never been manufactured or have failed to establish themselves. The main reasons for this are impractical design either from the manufacturing or use angle; the conservatism of British users, backed by the resistance of the older by-laws on solid construction; and the fact that although it is easy to produce units which have some advantage over the standard brick, it is difficult to produce a unit which has a balance of advantages.

"It seems clear," says Mr. Butterworth, "that no one pattern of big brick or block will be best for all purposes." He goes on to examine the functions which a brick must fulfil and outlines current processes of manufacture and the limitations imposed by existing methods on the production of perforated bricks.

The handiness of the standard brick is an advantage both in weight and adaptability to different sizes and types of wall. The author realises that these points will need careful consideration, but it is in the aesthetic field that there is most need for original thought. There is less guidance to be had from abroad on ways of producing a satisfactory architectural appearance with big bricks than on any other aspect of their use.

In this connection the second part of the paper by D. Foster, A.R.I.B.A., gave some indication of the scope and imitation of bigger bricks used as facings.

The main objection appears to be that which colour and texture need not differ from those of standard brick and the scale of a building in

which layer bricks are used as facings is affected. This may be something which time will accustom people to.

The aesthetic problems involved in building with layer bricks do not consist only in obtaining a satisfactory proportion between the depth and length of the unit as exposed in the wall. It is also necessary to consider the size of the unit and of the joint pattern resulting from its use in relation to the size of the building in which it is to be used.

A suggestion made in the paper is that if bricks of the large size which would be technically advantageous do not look right, an impressed pattern or some other treatment of the surface might improve them.

Mr. Butterworth described in some detail various types of larger perforated bricks, some horizontally perforated and some vertically perforated.

An advantage of the former type when one or both bed faces are divided by a lengthwise groove is that the grooves serve a dual purpose. First, since larger bricks may be inconvenient to span by hand, the groove serves as a lifting grip; second they enable the mortar joints to be interrupted so that there is no capillary path between brick and mortar to lead the moisture through the wall.

In facing work the horizontally perforated brick is of value owing to the apparent greater ease with which rain penetration can be prevented. Mr. Butterworth was careful to point out that at the present stage of research any suggestion for types of brick for development can only be tentative. Particularly is this so in considering bricks for facing work since much thought will have to be given to the architectural problems.

Under the heading "architectural implications" he says "It is obvious that modular co-ordination and the development of improved bricks are closely related. Proposals such as those which concern new sizes of one range of building products must be considered in relation to all other building components. The present dimensional disorder has come about precisely because of a lack of such co-ordination. It might be held that while small solid bricks are used they can easily be cut to fit any dimension, such as one between window openings, but it is clear that, if big bricks are to be developed then the need for their precise location is inescapable. The aim must be to let modular co-ordination permeate the skilful design and craftsmanship which already exists."

BUILDING MAINTENANCE

A discussion on Building Maintenance, arranged by the Technical Information Service of the Ministry of Works and the L.C.C. Brixton School of Building, held at the Empire Hall, Olympia, on 22nd November, with Sir Thomas P. Bennett, K.B.E., F.R.I.B.A., in the Chair.

The CHAIRMAN: We have come here in the endeavour to learn something about one of the most vexed problems of building, that of building maintenance. We hope that as many people as possible will take part in the discussion, but four members of the profession who are very prominent in the world of maintenance will open the discussion by short talks on different aspects of the subject.

First, Mr. Barr will draw attention to the close link between the design of buildings and the use of modern materials and their effect on maintenance. Mr. Edmonds, who will follow, has a wide experience of the practical work of maintaining L.C.C. buildings. I shall then ask Mr. Yeomans, who is a builder by profession with many years of experience of maintenance work on different classes of buildings, to talk about the subject as seen by the builder who has to carry out the work, and perhaps he will touch on the very difficult problem of the builder who is handling small quantities of labour and ordering small quantities of materials, and who has to do complicated work which is supposed to cost next to nothing but which seems to cost the earth. There is also the very difficult problem of the workmen with their tea-breaks, time-keeping and so on, which is nowhere more difficult than in the field of maintenance. Finally, we shall hear from Mr. Jackson, Director of Maintenance Services of the Ministry of Works, who will tell us something about the task of keeping records and of methods of remedying defects.

The building industry and building owners are becoming increasingly conscious of maintenance problems, and since the war a greater and greater amount of work has been carried out by large bodies such as the Ministry of Works, the L.C.C. and other local authorities, banks and insurance companies, big industrial owners, multiple stores and theatre and cinema groups, so that taking maintenance as a whole there is only, perhaps, a small part of it, and that mainly concerned with individual houses, which is dealt with on what may be called a retail basis.

Mr. A. W. C. BARR, A.R.I.B.A. (Senior Architect in Charge of Development and Research, L.C.C.):

My contribution is limited to the relationship between design and maintenance; I am not directly in charge of maintenance, and I am indebted in dealing with this subject to the help of my colleague Mr. Henderson, who is present.

Taking global averages, and bearing in mind that the L.C.C. has some 170,000 dwellings under maintenance, ranging from cottages to multi-storey blocks, and from brand new buildings to tenements over sixty years old, the main items of expenditure are (i) painting and decorating, (ii) plumbing, and (iii) carpentry and joinery. There are many other items, such as fencing and the paving of courtyards, but I shall confine myself to the three I have mentioned.

External and internal painting and decorating annually is about equal in cost to all the other types of maintenance put together. From the point of view of design, it is obvious that anything which can be done to reduce the volume of repainting should make a big contribution to reduction in maintenance and consequent economy; conversely, no system of construction is suitable for housing if it relies entirely on paint for its external finish. Some time ago I was attracted to a system of building multi-storey flats much more quickly than usual with large crane-handled precast concrete units. The whole economy of the production of these units depended, however, on having a painted and not an exposed aggregate,

and we did not proceed with it, mainly on this ground. On the other hand, in our smoke-begrimed atmosphere painting serves the function not only of routine maintenance but also of rejuvenation. You may have noticed the crisp white paint which we have given to the front doors on some of the older blocks of L.C.C. flats. The repainting of lamp-posts in Westminster in blue, silver and black for the 1951 Exhibition is another example of rejuvenation by painting, creating an atmosphere of gaiety and cheerfulness. Within very tight limits the use of paint can produce a dramatic and exciting architectural effect out of all proportion to its cost, and for this purpose a small area of strong colour in paint is often justified. The entire architectural effect of a housing scheme, however, must not depend on this alone, because in days of slum it is likely to be the first thing not to be maintained.

Plumbing includes those trades in which the bulk of maintenance is caused either by bad design or by bad workmanship. A great deal of trouble is caused during the first few years of the life of a building in ball-cocks, taps and stop-cocks by grit which has got into the system during building operations. Some of it is inevitable, but much is due to bad supervision on the site. The new design of ball-valve by the B.R.S., of which we have some 75 in experimental use, may be a boon in this respect. Even more trouble is caused by failure on the part of architects to protect pipework and fittings against frost, keeping them away from external walls. The subject of insulation has been so well covered by official publications that there is no excuse for continuing our traditional bad plumbing habits.

External plumbing should not give trouble until the building is of some age, but parapet gutters and other things are often a source of roof leakage. The trouble may start from faulty carpenter's work underneath.

Carpentry and joinery cover repairs to doors, wooden windows, floors and so on, and special reference must be made to dry rot. Reference to dry rot and pitch roofs shows up one of the main difficulties in reconciling maintenance with design, which is the rapid rate of change in design and the time-lag in discovering the associated maintenance problems. No sooner have our maintenance engineers pointed out the snags of pitch roofs than we find that flat roofs are being built, and by the time we catch up with the maintenance difficulties of these we shall be building frame constructions with curtain walls.

Designers can no longer rely on a set of constructional details intended for traditional building. Architects must understand the principles behind the behaviour of structures, if with all the new materials and techniques now flooding the market they are to discriminate sensibly and take maintenance properly into account. Two illustrations of this point are provided by accessibility and insulation. With regard to the first, architects are probably prone by nature to underestimate the space required by a plumber to wield a wrench or spanner in a pipe duct. There is also the accessibility required for cleaning and reglazing windows in multi-storey blocks of flats. To enable this to be done from the inside we in the L.C.C. are using pivoted lights where access cannot be provided from balconies. High buildings have special maintenance problems, and the cost of cradling can range from £5 to £15 for a simple window pair. In future high blocks, therefore, we shall try to design so that all external painting and maintenance can be carried out from balconies or from

the inside by providing pivoted windows. This will have a big effect on design.

Insulation I have already considered in connection with plumbing. It has a great bearing on condensation, a problem which is growing to large proportions in modern housing, aggravated by the cutting down of ventilation rates, the omission of flues and the lightness of many structures. Better insulation than has traditionally been provided is essential in modern buildings to avoid condensation and frost damage as well as to stop heat loss. It is easy to provide it at the design stage, but most expensive to add it afterwards.

In my comments on design my own ears are as red as those of many other architects not directly responsible for maintenance. I am convinced that architects and maintenance surveyors should see a good deal more of each other.

Mr. A. H. EDMONDS, A.R.I.B.A. (Senior Architect, Maintenance and Improvements Division, L.C.C.) :

Mr. Henderson, to whom Mr. Barr referred, has a very wide experience of the maintenance of the Council's large housing estates. My own experience is confined to colleges, schools, children's homes, health and welfare centres, supply depots, magistrates' courts, the County Hall, the Royal Festival Hall and buildings of that type. I would group the numerous sources of maintenance problems under three headings: (i) periodical maintenance or servicing of buildings; (ii) design, specification and supervision of the construction of new buildings; (iii) damage and neglect.

Dealing with (i), the value of periodical maintenance cannot be over-emphasised. If we look around us it is easy to pick out those buildings which do not receive sufficient attention. The main factor may be the funds available to the building owner, but I wonder whether some building owners realise the value of regular inspection and servicing, which in the end lead to economy. Most of us are familiar with the servicing charts for motor vehicles and the part which these play in prolonging the life of the vehicle. The same is true of buildings. If every building owner had regular inspection carried out by competent people, and if all concerned, right down to the workmen, made sure that adequate attention was given when the need arose, major repairs at a later date could be avoided. We often find that if proper attention had been given at the beginning to a leak round a chimney-stack, instead of just applying some compound, the decay of the timbers below might have been avoided. When dealing with dry rot, we often find evidence that someone has been there before and has not carried out sufficient renewals, or has neglected to deal with the causes. With external iron and steel, we find that joints on external staircases have been painted over, when dismantling should have taken place, and erosion and corrosion have started, when earlier attention would have enabled the complete renewal of members to be avoided.

With regard to the design, specification and supervision of the construction of new buildings, we have often found that the source of our problem is inadequate supervision and attention to detail or inability of the designer to appreciate and forestall the problems likely to develop after the building has been occupied. There are many precautions which can be taken, such as giving attention to pattern staining to save the expense of frequent redecoration, taking precautions against the penetration of damp, avoiding shrinkage cracks and excessive wetting of materials by the suitable storage of components, choosing suitable materials, avoiding the restriction of long lengths of material subject to thermal effects, such as providing sufficient clearance at the end of R.S.J.s, giving careful consideration to the effects of weathering, frost action and atmospheric pollution when selecting materials, providing adequate access to services and parts of buildings likely to require frequent attention, and so on. Many of us

will have had experience of a job at a high level which costs only a few pounds to do, but where we have to spend £60 to get at it. It is important to ensure that all possible information is obtained on new materials and techniques before using them. Do not hesitate to seek information from those who have used them or who have had the problems of maintaining them. Estimates of expected maintenance costs should always be prepared and considered at the same time as estimates for a proposed scheme.

Coming now to damage and neglect, we have such things as damage by storm, fire and vandalism, and the growing problem of wood-boring insects, and also the damage caused by roots of trees or climbing plants attached to a building, which could be avoided if the owners obtained expert advice before planting. A form of damage which is most irritating to those responsible for the design and maintenance of buildings is damage by the user arising from the use of unsuitable cleaning materials and the inadequate servicing of working parts. The use of caustic to clean paintwork and of metal-polish for bronze alloys are examples of this, and there is also the excessive use of water, and neglect to maintain adequate heating or ventilation.

I should like to emphasise the value of periodic inspection. Defects should be promptly and properly dealt with. Designers should be alive to the problem of maintenance, and experience of building maintenance should be part of their training. On the occupation of a building, the user should be given full advice on suitable methods and materials to use for cleaning. If all concerned with buildings and building maintenance would act on those simple principles it would mean not only a financial saving but also a considerable saving of skilled labour which could be used to better advantage in the building industry to-day.

Mr. A. W. YEOMANS, M.I.O.B. :

Although I have been dealing with maintenance on a large scale for very many years, I still find that there is a fascination in maintenance, because of the constant variation in the problems and difficulties which are experienced from day to day. I look on the maintenance builder as the general practitioner who is called in to diagnose as well as to try to cure the troubles which have assailed a building. The flaw in this analogy is that whilst a medical practitioner must prove his competence before he is allowed to practise, any individual who so desires can set up as a builder, and few building owners seem to care much about his competence so long as his price is low enough. We hope that the new Board of Building Education will eventually lead to a large increase in the number of master builders who have qualified by membership of the Institute of Builders before becoming employers of building labour. Some of us hope that the time is not far distant when building owners will prefer to employ firms whose executive staffs have the proved competence indicated by such membership.

The maintenance builder has to meet many criticisms at the moment on the ground of the cost of small work. A washer costs a penny, and people are surprised that he sends in an account for 15s—and then he loses 7s 6d on the job. There is complaint of apparent lack of organisation and supervision, the use of unsuitable workmen and, on some occasions, the seeming indifference of those workmen to the inconvenience caused in occupied premises. I hold no brief for the incompetent builder, but the maintenance builder has for some years been struggling to cope with a huge accumulation of work due to war damage, repairs deferred under the licensing regulations, and a vast number of repairs due to sheer neglect. In spite of over-full employment, the collective output of the maintenance builders of this country is an achievement of which they can be proud.

Materials which before the war were available at short call

Building Maintenance

are often in short supply, and in some cases manufacture has been discontinued entirely, calling for improvisation and "know-how." The supply of suitable labour is almost exhausted. Before the war there was a steady flow of skilled craftsmen into maintenance, men who, when they reached a certain age, seemed to prefer to exchange new contract work for jobbing, where craft skill was necessary and also initiative, and where the work was more varied and gave, perhaps, more protection from the weather. We then had to train these men. They had to be self-disciplined and able to work without constant supervision, putting the interest of the job first. They were worth their weight in gold. During the war, large numbers of the men that we had so carefully gathered together were absorbed by other industries, and the men who ought to have followed them were in the Forces. It may be necessary in some areas to wait for the lads who are now going through their apprenticeship before we can say that we are satisfied with the craftsmen who are coming in to do our work. We are likely to be desperately short of men of the right type for some time to come. As the backlog of work is mastered the position may improve, but in the immediate future we are being asked to assist the Minister of Housing in the improvement and conversion of existing houses and, if we are to take our full share of this load, we shall have to make the fullest possible use of the materials and labour available for the next decade.

This raises the question of whether there is a large proportion of avoidable maintenance work being executed constantly, year in and year out, work incurred because of insufficient pre-natal care in detailing in the architect's office or due to errors and omissions during execution, or misuse or sheer neglect on the part of the occupier. Examples are concrete roofs and floors with insufficient provision for expansion joints, granolithic floors laid on screeding fouled by plasterer's droppings, wood floors becoming loose because of insufficient fixing to concrete, lack of proper weathering and dampcourses to parapet walls, damage by rusting to iron-work of all kinds left about in the open before fixing or painting, failure in painting woodwork due to the use of unsuitable primers, trouble with plaster surfaces because people are impatient and will not wait for drying out, and so on. The sanitary fittings in some luxury flats have pipes which are beautifully concealed and difficult to get at, and which may even have controls in adjacent flats. There is also the steep mansard roof of the 6-storey block of flats, where a scaffold has to be hung each time a tile has to be replaced.

We know from official figures that a total labour force of 322,000 men is being used on work other than new construction or housing. How much of this labour is wasted on "un-avoidables"? Is it odd 22,000, or is it 100,000? We do not know, but a very large leakage is taking place which should be stopped, even if we have to deal with it as a very long-term problem of re-education. Several of my friends from the education world are here, and I hope that they will consider this carefully.

It has been possible to re-educate the whole nation by means of the Coal Utilisation Council to use fuel of very bad quality and of which there is very little available. The C.U.C. have been able to educate all the strata of society; they have got the manufacturers to manufacture stoves to suit the worst quality of coal, they have got the public to buy these stoves, and they have even taught the builders how to put them in. It seems to me that our problem of re-education is rather like that tackled by the C.U.C. We have seen in our own business the influence of the teaching of our accident prevention groups.

It should not be beyond us as an industry to set up some body, probably under the Board of Building Education, to initiate a scheme which would make all those concerned maintenance-cost-conscious, so that the "avoidables" would be reduced, and the labour and materials which are now being wasted would be re-channelled into productive work.

Mr. W. T. JACKSON, M.B.E., A.R.I.B.A. (Director of Maintenance Services, Ministry of Works) :

Property-owners are generally convinced of the need for good maintenance, but they want to be assured that they are not spending money unnecessarily. The property-owner is very much concerned with the preservation of his capital assets, but he wants to preserve them at an economic cost. The prime function of all of us who are responsible for maintenance is to be able to satisfy the owners not only that the costs are reasonable but in fact that the expenditure is a sound investment. Maintenance is as much an economic problem as a technical one.

Let me tell you what we in the Ministry of Works call maintenance: (a) all operational services, such as stoking boilers, driving lifts and so on; (b) all minor maintenance, in jobs up to £50; (c) all redecoration; and (d) any structural repairs or replacements of engineering services.

It is easy merely to record the costs under such broad sub-headings, but that merely states facts and does not give the assurance that those costs are not excessive. It is not sufficient to record the costs and rely on good supervision, because there is a good deal of maintenance work which cannot be supervised. In the Ministry of Works up to 60% of our expenditure goes on operational services or minor maintenance, and in the latter category the average job costs £5 gross. There are hundreds of them, and they can rarely be seen before they are done or supervised during the job or after it is finished. If we are to control them and to assure ourselves that the cost is economic, we must provide some alternative to supervision.

I suggest, therefore, that maintenance costing must do more than just record the cost. First, it must be the main instrument for control, particularly of the small jobs. In maintenance, if we look after the pence, the little jobs, the pounds will look after themselves to some extent. Secondly, the costing must provide a quickly-available record of what has been done for the money. Thirdly, there must be a quick and easy means of the analysis of costs and the units of work and material. Fourthly, there must be a basis for studying the economics of cost in relation to the value, life and future use of the structure. The record of costs must make it possible to advise architects and owners on the economic figure which can be used in the maintenance of a building in relation to life, use and structure, so that we can be sure that we are not propping up a ruin at enormous cost or scrapping a building when it would pay to spend more on maintenance and save it.

In preparing these costs, the costing must be done by following the essential processes of accountancy. Maintenance costs are closely integrated with accounting procedures. We must know that the entire expenditure is fully accounted for and brought to charge. My department will be very happy to give more detailed information about our researches over the last four years to anyone who is particularly interested in this problem. I cannot go into it all here, but briefly, the basis of our costing system is that every job, however small, is the subject of a works order and, by using an original accounting device which we have worked out, we are able to record the full labour costs of every one of those jobs, including all the local overheads. We do not believe in adding an overall percentage for overheads, but make each individual depot carry its own overheads.

We record the costs of every job, however small, not only on completion but every morning until it is finished. Every

foreman in our organisation can see the full labour cost, including overheads and on-costs, for every little job, even putting on a washer, as soon as the job is finished or each morning if the job is not complete. That is the basis of our organisation. It provides the control which is needed, and there is no need to emphasise the value of that. The foreman can at once do something about it if the cost is shown to be too high. He knows the exact man-hours, whether it was done in overtime-hours, and so on. All that is done without using any paper at all.

The costs are posted to buildings, and the accounting record cards and a priced copy of the order are filed in the local depot, giving a record of the work done and the means for analysis. The district officers have the costs reported to them on the various buildings quarterly and annually, on a cost card which gives the cost under seven sub-headings. They are thus able to watch the costs on individual buildings, and, if they do not like the look of things, they can go to the depot concerned and call for the building file, which will include a copy of every order which has made up the cost, and each order is priced. They can see whether or not what has been done has been reasonable. We also analyse periodically many of these building files to ascertain the cost and the behaviour, from the cost point of view, of materials, sections of buildings, heating, plumbing, lift-driving and so on. The annual cost cards are worked out for the unit cost in cube or superficial area.

That gives us the information necessary for economic control, because when we have that information, which is all built up automatically from the individual job information, we have sufficiently accurate statistical information to draw satisfactory conclusions and advise the owner on the economic level of maintenance expenditure.

I have not touched particularly on the larger jobs, which are much more easily controlled. They are all left to lump sum tender. The only difficulty there is in programming and progressing, getting an even spread throughout the year and ensuring, by proper accountancy means, that we spend the money which we have available and no more. Here I would mention the importance of budgetary control. It is common sense to lay out in advance how much money you are prepared to spend on a particular function. In relation to maintenance this is very important, because the building owner wants to know in advance exactly what he is going to spend, and without good cost records it is impossible to tell him accurately. Without a good budget one may run short of money and have to put off maintenance which ought to be carried out, or else leave money in the "kitty" which could have been spent on something more useful. In the Ministry of Works we have a maintenance budget of some £14 million, and we bring that out to around 1%.

I would emphasise the importance of employing an adequate staff for maintenance. Maintenance is not a job for the less efficient; it is an extremely exacting science, and the people responsible for it have demands made on them which are quite outside the sphere of the ordinary professional man. The maintenance officer needs to be a first-class business man, an accountant, a statistician, a lawyer, and industrial labour manager, and, at the top level, a very competent economist and an organisational and accounting expert. You do not get that calibre of man by sending odd-job men to do the work. To building owners I would say that when they put up a house or buy a house they should remember that during the full life of that building they are going to spend as much again as they spent to build or buy it; they will spend as much again in operational services and maintenance, and it is only commonsense to lay out as much on a competent staff to maintain that building as on a competent staff to build it.

The CHAIRMAN: In these days of high taxation we can only look with admiration on a man like Mr. Jackson, who has

£14 million a year to spend! I will ask Mr. Bell, who is a member of the Federation of Specialists and Sub-Contractors, to open the discussion.

Mr. R. L. BELL, (F.A.S.S.): I am one of those who are more interested in reducing maintenance than in doing it. There is a need to-day as never before for conscience in craft and in commerce. Ultimately, the skill of the man on the bench decides the issue, but his conscience must be fortified by the conscience of the employer. There is far too much thought for today and far too little thought for tomorrow, so that we see excessive profits being made at the expense of the cost of maintenance. We hear too frequently the word "maintenance," but we do not hear sufficiently the word "maintainable." "Maintainable" means get-attness, and accessibility and the correct placing of the work are most important in the mechanical and electrical trades.

I would emphasise in this connection the need for the architect and the building team to get together at the conception stage. At the contract stage fruitful collaboration may be costly, if not impossible, and so far as the plumbing trades are concerned it generally does not take place. Early consultation with heating, electrical and other engineers during planning can in most cases give a layout combining elegance with accessibility. Another requisite is good-quality fittings, of British Standard where possible.

In large installations it is wise to obtain the services of a qualified engineer to see that the work is properly maintained. There should be investigation at regular intervals, and not just when something goes wrong. This involves regular inspection, and a maintenance contract. The test of a good contractor or sub-contractor should be his willingness to undertake a 5-year or 10-year maintenance contract with the building owner.

If architects and building owners would take a much greater interest in that section of the industry which does most of the building work, the sub-contractors, it would reduce maintenance costs. It would be a good thing if at the tender stage builders were expected to put forward the names of their sub-contractors, thus giving the building owner and architect an opportunity at that stage to approve them or otherwise. That will also mean that there will be less likelihood of subcontracting work being hawked round to irresponsible people for a cheap price, leading to temporary saving at great cost later on. The builder will be prompted to put forward a time-tested team. Teamwork is important in lessening maintenance costs. The public should insist on an assurance of the competence of master builders, master plumbers, electricians and so on.

Mr. H. V. LOBB, C.B.E., F.R.I.B.A. (representing the President, R.I.B.A.): As an architect, I am stunned by the information which has been given to us so far. Many architects and builders are short staffed and could do with more men on almost every job, yet we have heard from Mr. Yeomans that there are something like 320,000 men engaged on maintenance, and that £14 million is spent annually by the Ministry of Works on maintenance. I saw in *The Times* recently that the Minister of Education reckons that we have to spend about £500 million annually on education.

On the subject of building maintenance, my advice is like the celebrated advice of *Punch* to those about to get married—"Don't." If a building was properly designed in the first instance, a large amount of maintenance would be avoided. Builders and property owners should realise this and respond to the appeal of the architect, which is frequently made at present without success. We are to-day pegged down to a very low cost per place for schools. Everybody wants to know a cheaper type of flooring, and to cut down the floor area and the standards of finish, using cheaper this and cheaper that, so that a poorer building results. We know the efforts which are made by the Development Group of the Ministry of Education, and I do not decry them, but they are struggling against the continually increasing cost of building, so that there is a general desire to do something a little cheaper, which almost inevitably means a little worse.

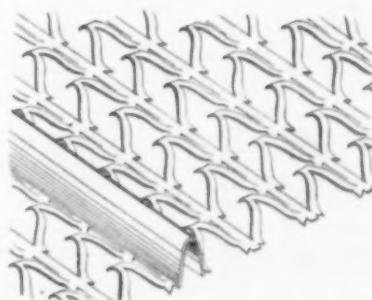
How then, are we going to face in a year or two the fantastic problem of building maintenance? The figures will be even higher in a few years' time, and the building industry will find even more labour tied up in maintenance work, or else



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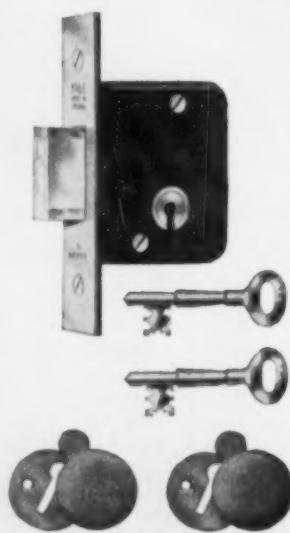
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Building Maintenance

the maintenance work will not be done. I should like to persuade you all to enable us to spend just a little more in the first instance, so as to cut down this very real problem of maintenance.

Mr. H. BAYLISS SILVER (Registered House Builder): My own work before the war was chiefly the building of houses to let on my own estates, so that if I made any mistakes twenty years ago I am suffering the full effect of them now and have to find the money myself to remedy them. I was very interested to hear of the many things which can go wrong in Council houses. We have been told by politicians that the defects in privately-owned houses are due to jerry-building, and no doubt all the troubles which the L.C.C. experience are due to acts of God!

Mr. Yeomans suggested education of the staffs of architects and builders so that avoidable items of maintenance are reduced in future. If that is so successful that no errors are made in the future, Mr. Yeomans will have put himself out of work!

Mr. YEOMANS: Most of the "avoidables" crop up within a short time after the period of maintenance under contract, or within it, and the main contractor has to deal with them. Those that do not crop up until later are dealt with by the maintenance builder. The maintenance builder runs no risk of being out of work in our lifetime, because there is a vast backlog of work to be done. We must try to see that available labour and materials are used to the best advantage.

Dr. H. E. DESCH: My work involves maintenance, particularly from the angle of dry rot and wood-worm problems, and I would plead for wider education, because the amount of labour used and the expenditure incurred are often quite unnecessary. There is a large amount of impartial scientific data available if only people will use it. In my professional work I come across a great many cases where large sums of money have been spent, for example, in treating furniture beetle attack long after that attack has ceased to exist, and where chemical treatment of timbers for death-watch beetle infestation is carried out when the structural strength of the timber has already been destroyed. I meet instances where chemical treatment has been carried out at a cost equal to that of purchasing entirely new timber, and in the long-term it is the new timber which should be used. We should induce people to obtain impartial scientific information when they are tackling this type of maintenance problem.

So far as trees are concerned, a great deal depends on the soil in which these trees are grown. In the shrinkable clays I would not have a tree within the height of the tree away from a building, and with Poplars it should be twice the height. Much of my work is concerned with litigation arising out of trees being allowed to grow too close to buildings in unsuitable soils. This is a matter of great concern to local authorities, and there are cases pending where, if it came to Court and the authority had to pay, it would put 6d. on the rates.

Mr. R. A. WOOD (Building Contractor): My experience follows closely that of Dr. Desch, because I want to speak about dry rot, and about the help which the Building Research Station have given in the development of zinc oxychloride treatment. It is now 3½ years since a paper on this matter was published, and during that time I have had an opportunity to use these materials and find out some of the snags, and also see where they are effective. I believe that the snags have been overcome and that the technique is successful.

It is well known that the trouble in treating dry rot in the past has been to eradicate it from walls. Often excellent treatment has been given, the dampness cured, the defective timber taken out and new timber put in with good preparation, but within a matter of months the fungus has returned. The usual reason is that the walls take a year or two to dry out, and the fungus is still left in the centre of the wall. No satisfactory treatment has yet been devised to get rid of it, and it reinfests the timber.

The Building Research Station have taken the view that if they cannot get rid of the fungus from the wall they can seal

it there, and so they tried to develop a material which would act as a barrier, so that at least for a time the timber would be protected. I say "for a time," because it is fundamental in treating dry-rot that the dampness must be cured. It is no use keeping dry-rot out by the back door if it can get in by the front door.

Zinc oxychloride is made in a plaster and in a paint, and in both forms I have found it effective for stopping fungus growing out of the wall and reinfecting the timber. I have come to two main conclusions from this work. The first is that people engaged on maintenance can help the research staffs considerably by trying out new techniques which the research workers develop. There were snags in the application of this material. The plaster came off and we had to find out why, but we have found out the reasons, and it can now be put on so that it stays on. Secondly, some people have said that these processes are expensive, but practical work has shown that this need not be so. If the fungus returns the expense will be greater, so that it is better to spend a little more on prevention to start with. The treatment is to form a barrier, and is, as I have said, in the form of a plaster or paint. Many people have in mind that plaster should run from the skirting to the ceiling, but the barrier is not wanted in the middle of the wall; it is wanted behind the timbers. It should be put under the floor, over the ceiling, and behind window and door frames or paneling. If it is put there and not used to cover the large spaces of the wall in between, the material is not expensive. It is expensive per cwt., but if used only in the right places it is far cheaper than the alternatives which have been available to us in the past.

Mr. CHITTENDEN: suggested that electrical and plumbing fittings in buildings could be compared to the engine in a motor car, and said that when the mechanic wanted to overhaul the engine of a car he found it readily accessible. Designers in the building industry should take a lesson from other industries. The shipbuilding industry, for example, did not use nails, and in certain places in a building it would pay the architect to specify steel or copper screws. Every good maintenance man tried to leave behind him a better job, to make subsequent maintenance easier, and would, where desirable, substitute brass screws for nails.

Mr. CHARLTON: As a small builder, I am interested in what has been said, but no one has touched on the maintenance of the older houses which many of us have to spend our lives in repairing. There has often been neglect in the case of these old buildings, and periodic inspection and the giving of proper attention have been suggested; but when I hear a figure of £14 million given as the cost of maintenance for the Ministry of Works alone, and consider the sums which must be spent by local authorities and others, I wonder whether it would be possible for many of the older properties to receive similar treatment if the money was there to do it. I think that lack of money is the origin of the trouble. I have heard nothing yet which will help us in caring for this old property, from fifty to one hundred and fifty years old, which cannot be pulled down in the next quarter of a century. I agree with Mr. Yeomans that we find it a dead loss to put in a washer, and that goes for many other jobs as well. How are we to get our costs down on maintenance work on these old properties?

The CHAIRMAN: In London a very widespread and difficult problem is presented by the vast number of houses built between 1830 and the end of the century. We are all familiar with the major features of those houses so far as maintenance is concerned, such as the absence of damp-courses and all the troubles which follow from that, and the troubles due to the stucco fronts, particularly when maintenance is neglected. Occasionally there is trouble from timber put in for fixing purposes too near the surface of the wall, and so on, and there can be a host of troubles in the roof, particularly where zinc and other semi-perishable materials have been used and have been patched up for years with other temporary substances to tide over a bad period which never seems to end.

In addition, however, we have the problems connected with the newer building techniques. In the case of the United Nations building in New York, with its vast flat surface in an

exposed situation, the effect is that driving rain goes upwards instead of downwards, and for this the designers made no provision. There has to be continuous repairing of glass due to expansion. These are newer problems of maintenance. It would be interesting to hear, in the short time which is still available, a few speakers who have knowledge of the widespread problems of still useful old properties or who have experience of maintenance where new materials have been used.

An ARCHITECT: I suggest that unnecessary maintenance costs can be reduced by the better dissemination of information which already exists in research stations and in the research departments of manufacturers, and that the real difficulty is in getting it on to the desk or drawing-board of the average busy architect. A great many defects arise because precautions which are well known to some people are not known to enough people. I do not know the answer to this problem, but it is now being tackled.

I think that the relation of capital and maintenance costs is basic. When people seek to save money in capital cost it is rarely on the major items; the money is saved on marginal finishes and equipment, and it bears to relation to the amount of cost and trouble which the building will require later as a result. If we had a little more money to spend in capital cost we should spend it not on gold-plated knobs but on brass screws and on paint instead of distemper, on tiles instead of stucco, on brick instead of asbestos. The extra cost of these things, which would cut down our maintenance costs, is minute compared with the cost of a new building, but they are things which it is easy to cut. Until architects, surveyors, engineers and builders hammer home the point that the saving of pence at the building stage will cost pounds over the next sixty years, we are never going to get anywhere. The present clamping down on capital expenditure is already going to burden this country with higher maintenance costs over the next sixty years, and it is too late to do anything about it so far as recent expenditure is concerned.

Mr. E. A. HENDERSON (L.C.C.): The desirability of co-operation between those who design buildings and those who maintain them has been mentioned, but there is a danger of losing the advantage so obtained by the tendency nowadays to get some workmanship which is slightly below the standard we should all like to see maintained. Probably that danger is greater on very large schemes, where the supervision may be rather less than on small ones. There will be a clerk of works on a small scheme, but it will be quite a large scheme before he is given an assistant. The approach of the clerk of works on this point usually results in the comment "It's the bonus." It is true that that does create difficulties, but I am certain that if there was no bonus the architect would find it extremely difficult to put up buildings at a cost which would be considered reasonable, though I do not say that all costs are reasonable now!

The types of defect of which I am thinking are the simple ones, such as the lack of a physical joint between the horizontal dampcourse of a parapet and the tuck-in of the apron of asphalt flat, the poor setting of a coping-stone to a parapet and so on. In carpenter's work we have found poor hanging of doors, and with a plasterboard ceiling there has been too much overhang of the plasterboard, causing it to bend slightly where it meets the wall. With pitch roofs the Ministry's economic standards may lead us into trouble in years to come, particularly where in order to save one joist, that standard has been stretched a little further. We can already see, on some new housing estates, roofs beginning to sag.

By giving support to the efforts of clerks of works to attain a high standard of workmanship, all who are responsible for building can help to maintain such a standard, and so save costs in the future.

With regard to the cost of maintenance work, it is difficult to think that control of costs can be applied to all the very small jobs which we come across. On normal housing each house requires a job ticket every quarter and with 170,000 houses we get 600,000 small jobs a year. The labour of costing every one of those would not be worth while, unless we could prepare an estimate for the particular item. We try to segregate the work between the various trades.

Elm trees are almost as bad as poplars in creating settlement of buildings.

The CHAIRMAN regretted that time did not permit of further discussion and invited the four principal speakers to say a few words in reply.

Mr. A. W. C. BARR: Mr. Oakes suggested that if we had timber instead of solid floors, so that draughts would come through, we could do away with smokey chimneys. That is one of the traditional ways of providing ventilation which has stopped smokey chimneys, but it has been responsible for a lot of bad heating. With proper modern stoves there is no need to resort to timber floors for ventilation.

Mr. EDMONDS: Reference has been made to the use of glass in L.C.C. schools. When the first of the modern schools came under my responsibility we kept a close watch on it, and it went two years before a pane of glass was broken, and that was broken by accident. In another locality, however, it has been necessary to renew nearly every pane of glass owing to vandalism—the use of air rifles and the like—so that there is no yardstick by which we can judge. The general experience is that there is only minor danger of breakage by accident, and that vandalism is our biggest problem in London. Glass is a permanent material, and if properly constructed should be quite satisfactory, apart from wilful damage.

Mr. A. W. YEOMANS: I should like to take up the point about the old buildings. They will gradually be dealt with in the rebuilding of our towns, but meanwhile something can be done by getting more knowledge of the maintenance value of the new materials. We are being flooded with new materials and with alternatives for well-tried materials. Sometimes the old materials are going off the market and new ones are coming in. Before we use new materials on old buildings we should make certain that they are of the right type, so that future maintenance will be reduced as much as possible.

Mr. W. T. JACKSON: The discussion has proved my point that a real knowledge of maintenance costs is very valuable. Most of the speakers seem to think that maintenance costs are due to bad design, but that is not so, and that cause comes a very poor last. Statistical analysis over a very wide field shows that the first cause is wear and tear, while the second cause of maintenance costs is the preservation of materials which require painting. The third is age, and a very poor last comes the remedying of defects due to poor design or the use of bad materials. That may be because the Ministry of Works is an exceptionally good builder! It makes it obvious, however, that much of the expenditure is inevitable, and that reinforces my view. One speaker said that it is not worth while recording costs of small jobs, but 55% of our expenditure is on small jobs averaging £5 apiece, and if we save a shilling on each of these we save the taxpayer a considerable sum of money. Without our rigorous system of control, our figure of £14 million might well be £24 million.

The CHAIRMAN: There are a few points which stand out in this valuable discussion. The first is the basic idea of all technical work, that education is of the first importance in enabling us to build with accuracy and permanence and at minimum cost. Secondly, there is the importance of the dissemination of information of a really practical and readily accessible kind from our various research departments. I have on previous occasions emphasised this aspect of research, because in spite of the publication of leaflets in technical journals I feel that the research workers have yet to find a properly indexed means of providing this information permanently, in an easily digested form, on the desks of all the technical men who could use it.

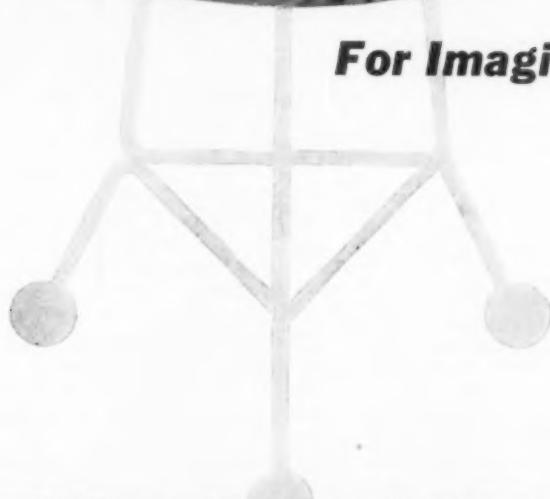
A second line of defence, in addition to that dissemination of knowledge, lies in the hands of bodies such as the L.C.C. and the Ministry of Works. I should like to see them publish in some form or other the collective results of their experience, so that they would be made available to the rest of the profession. There are certain political objections to this, because if the Ministry of Works published a volume of 967 pages of defects it would be said "That is the sort of building in which Tory Governments indulge," while if the L.C.C. did the same sort of thing, thousands of householders would say "That is precisely why this is such a wretched house." Big departments, however, have to rise above those trivial objections, and they might be followed by other big maintainers of buildings, such as insurance companies. In this way we should have available a great amount of first-hand experience.



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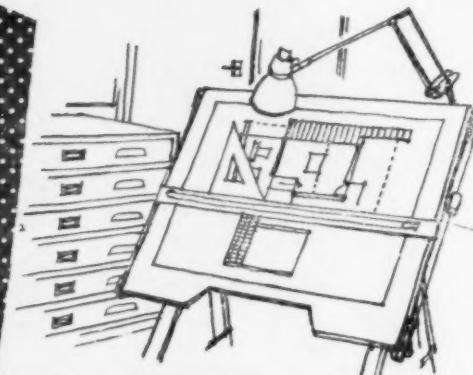


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Building Maintenance

Then there is the question of balancing capital and maintenance costs. We have a duty to advise clients who wish to build at too low a figure. An enemy of such good advice is sometimes the statistician, who produces figures to which he asks us to build. Many years ago I designed a few flats for the L.C.C. Their officials told me that I must work to £150 per room, because that was what they did themselves. I could not get down to £150, so I asked them to show me some drawings and specifications. That was 25 years ago, and they have not arrived yet. When I was Director of Works at the Ministry of Works, the War Office told me that we ought to be able to build Army camps at £50 per head. I said that we could not do it, and asked the Army to show me how they did it. After a long time they produced a blue-print for a camp for 1,000 men. It was on a dead flat site with two adjacent roads with a full length of sewers and with water, gas and electricity. There were no trees, bushes or hedges. It was assumed that there was gravel soil 18 inches below the surface, with a light top soil which could be taken off with a scraper. I was assured that a camp under those conditions could be built at £50 per head—but we have not yet found the site! These targets may be valuable, but, as several speakers have said, the attempt to get down to a price per unit does sometimes result, and perhaps more often than is thought, in reducing the cost of building at the expense of the cost of maintenance.

I was glad that Mr. Jackson pointed out that a great deal of maintenance is quite inevitable, and it may well be that that applies to the biggest portion of it. At the present day this matter is of essential importance, and that is why we want much more current information. Faced with a rise in building costs of 3½ times 1939 costs, and with a graded tax and a demand for a vast number of buildings, we are endeavouring to build at considerably less than 3½ times the corresponding costs in 1939, and in that process we inevitably find that there is some cutting of the cloth which it would be better to leave undone.

Reference has been made in the discussion to wastage due to bad detail, which may be the result of pressure to save money, or ignorance, or to a combination of circumstances over which few people have any control. The limitation of the amount of money available to be spent undoubtedly has its effect.

Questions of accessibility have been referred to. We have all suffered from this trouble. It requires, perhaps, more knowledge than many of our young architects possess to be sure that it is possible to get at all parts of the building which must be got at. So far as insulation is concerned, we are only just beginning to learn what heat does to buildings. Many years ago I had trouble with cracks in a building and visited it every morning to see what was happening. In certain cases I found that quite substantial cracks in a hot July disappeared in 24 hours.

There is also the ever-present problem of supervision and bonus on output. The bonus may tend to lower the standard of building, but we are becoming more used to the idea of a bonus on output coupled with quality. We have not yet learnt completely how to bonus production and quality combined, and that is one of the problems which the industry must tackle. We must find out how to adjust the bonus so that the first-class craftsman who works hard gets a just reward for his labour, as opposed to the man who is merely concerned with how much he can produce.

Reference has been made to the dangers of neglect and to the reluctance of some people to spend money on regular examination to avoid maintenance charges. Periodical inspection is something on which those of us who are in charge of buildings must insist. Large organisations should have local maintenance officers and perhaps a yearly inspection to see that the right work is done.

Sir ERIC SEAL (Deputy-Secretary, Ministry of Works), who proposed a vote of thanks to the speakers, said that as a layman he had been impressed by what an immensely complicated business maintenance was. Discussion had ranged from the properties of zinc oxychloride to the problems of capital

expenditure and almost to the effects of the "credit squeeze" on future buildings, but the discussion had only scratched the surface of an immensely difficult and important subject.

He did not regard the effort which was going into the maintenance of buildings as excessive. Of the 1,600,000 men in the building industry, less than a quarter were engaged on maintenance. There was an immense stock of buildings in the country, some of which were very old, and it seemed remarkable that it was possible, with such a small proportion of the total building force, to keep them in a reasonable state of repair. He hoped that posterity would not feel that this generation had let them down in that respect.

Mr. H. J. ADAMS (Chairman of Governors, Brixton School of Building), who seconded the vote of thanks, recalled some of his experiences as an operative and said that maintenance work would be more easily carried out on some occasions if there was less interference from owners or occupiers. He remembered working on a large house where the joints between the stone needed repointing, and the lady of the house said that she did not want the moss which had overgrown the joints to be interfered with, so that it had all to be replaced.

Hammersmith School of Building and Arts and Crafts.

Mr. E. Maxwell Fry, C.B.E., F.R.I.B.A., presented the prizes at the Annual Distribution held at Hammersmith Town Hall on 17 November.

Mr. Fry said in his speech that he was still very much a student in all he undertook. In fact, to him the atmosphere of studentship is essential if an architect is not to grow old in spirit. Such atmosphere is in itself related to environment, and on that account alone, he thought the Hammersmith School of Building and Arts and Crafts quite unique, as it provides the background of all the differing parts of the Building Industry.

He was convinced that interrelation between all the aspects of trades, professions and arts was essential; the architect and engineer reaching a stage of being distinguishable. It was only by so doing that one could come to some kind of terms with the surrounding facts of life and thus create an environment which was essentially our own.

Many students, he thought, would, upon reflection, wonder what type of civilisation they have inherited, particularly as during the last 100 years we have moved so fast and not had the brainpower to digest it. And yet there was no doubt that each student has a job to do, either large or small. In all cases the job can be contributory towards not only culture, but also civilisation.

The Principal, Mr. E. M. Rice, said that: This year enrolment has shown an encouraging rise of about ten per cent. This has been accounted for by the Art and Building departments, the Building Crafts department having almost exactly the same enrolment as last year.

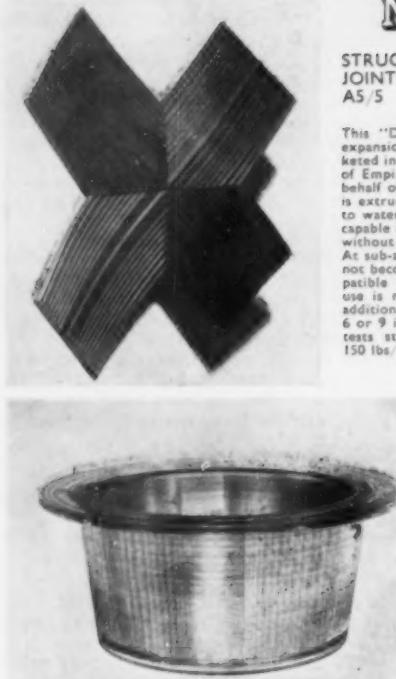
Quite the major event of the year had been the full inspection of the School by Her Majesty's Inspectors which took place last January. The report arising from the visit has recently been made available to the Governors and as is to be expected contained both criticism and commendation. Probably the most significant feature, however, was the attention which was drawn to the overcrowded state in which the School has to work and the need for further accommodation, furniture and equipment.

While the problem of additional accommodation in this area must always be a very difficult one, there was some real hope that within the immediate foreseeable future the School would be in a position to house all its courses and classes in adequate accommodation and that the whole matter of refurbishing where necessary would be undertaken. With the provision of further accommodation it would be possible to house additional equipment and to look forward, to a situation in which staff and students could work in conditions which if not spacious would be unclamped and orderly.

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This "Durajoint" watertight P.V.C. construction and expansion joint for concrete structures is being marketed in the U.K. by The Micanite & Insulators Co. Ltd. of Empire Works, Blackhorse Lane, London, E.17, on behalf of the manufacturers, Duratube & Wire Ltd. It is extruded from special grade P.V.C. and is resistant to water, acids and alkalis, impervious to weather and capable of withstanding temperature up to 100 deg. C. without appreciable loss of elasticity or undue softening. At sub-zero temperatures it tends to harden, but does not become brittle, even as low as 20 deg. C. It is compatible with bituminous compounds and whilst their use is not essential, they may be used if desired as additional safeguard. Available in strips either 2*1*/₂, 3*1*/₂, 6 or 9 in wide and in rolls of 60ft long. In laboratory tests strips of "Durajoint" withstand pressures of 150 lbs./sq.in or approx. 350 foot head.



SERVICES LIGHTING FITTINGS B1 93

The new "Dielikon" refractor has been introduced by Wardle Engineering Co. Ltd., of Manchester, 16. It is moulded from Diskon, and acrylic resin developed by I.C.I. Ltd. The material has great strength combined with lightness and outstanding weathering qualities. It is claimed that the performance of the "Dielikon" is such that a 150 watt lamp gives results comparable to that of a 200 watt lamp under normal control. All the prisms are sealed and are dust and damp-proof and all exposed surfaces are smooth. Suitable for use with G.L.S. Lamps up to 200 watts or with vertical burning discharge lamps up to 125 watts.



SERVICES SPACE HEATING B3 79

The "Behr" portable electric convection room heater can be obtained from Riso Trading Agency, 377 St. John Street, London, E.C.1. It can be supplied with room thermostat and is guaranteed for two years' trouble-free service. It has a three-way switch. Position 1 gives half performance; cold air penetrates through the base and lukewarm air leaves through the top. Position 2, cold air penetrates from the base and warm air leaves through the top. Position 3, warm air leaves through the base and spreads on the floor. Current consumption is 1,000-2,000 watts. Suitable for voltage of 220-240 A.C. Size 12*1*/₂in x 12*1*/₂in x 22in. Weight 20 lbs. Constructed with metal frame and enamelled hardboard in five colours.



FITTINGS FURNITURE C8 8

This new furniture rest has been produced by Armstrong Cork Co. Ltd., of Bush House, Aldwych, London, W.C.2. Designed to diminish damage to floor and floor coverings by indentation and marking. They bear the weight of the heaviest furniture and enable the furniture to be moved without effort or marking. The furniture rest has a smooth plastic base from which stems a ball joint supporting the fixing member. Available in two types (copper and nail) and in sizes $\frac{1}{2}$, 2 or $\frac{3}{4}$ in dia.

INDUSTRIAL NOTES

Premiums for technical writing are offered by the Radio Industry Council to increase the availability of suitable articles on electronics. Up to six premiums of 25 guineas each are offered yearly in respect of articles which, in the opinion of the Council's panel of judges, are likely to enhance the reputation of Great Britain in radio, television and electronics. To enter, copies of the appropriate journal or pages have to be sent before the end of the year to the Secretary, Radio Industry Council, 59 Russell Square, London, W.C.1. with a written declaration that the writer is eligible. Articles in privately published journals of professional bodies are not eligible, nor may the writer be earning more than 25 per cent. of his income by book royalties or the writing of articles.

● To make better known the help that British business men can get from officials of the U.K. Government stationed abroad, the Foreign Office and the Board of Trade have published a pamphlet called "Helping the Exporter" which is being distributed by the Association of British Chambers of Commerce, the Federation of British Industries, the National Union of Manufacturers and the Institute of Export. Single copies are also obtainable from the Board of Trade, Horse Guards Avenue, London, S.W.1. (Room 8185) Telephone: Tra. 8855 Extn. 2928.

● The Daily Mail Ideal Home Exhibition of 1956 will be held at Olympia from March 6 to March 31.

● Mr. George A. Keer, Kilns Manager, J. Gliksten and Son, Ltd., and until recently Hon. Treasurer of the Kiln Owners' Association, was elected Vice-Chairman of that body at the Annual General Meeting on the November 22, 1955.

● Plaster Products (Greenhithe) Limited, have moved to Bath House, 82 Piccadilly, London, W.1. Telephone No. Grosvenor 1171.

● Dr. G. L. J. Bailey has been appointed Superintendent of the Platinum Metals Research Laboratory in the Development and Research Department of The Mond Nickel Company Limited at Acton, London, N.W.10., in succession to Dr. E. C. Rhodes. Dr. Bailey will take up his new duties on February 1, 1956. Mr. E. J. Bradbury has been appointed Assistant Superintendent of the Development and Research Department Laboratory of the company in Birmingham.

● It was decided at a recent meeting of the Institution of Production Engineers Council to set up a special committee to investigate the full implications of automation. The Chairman of the Committee will be Mr. A. F. Kelley, Director and General Manager, (Manufacturing), Aero Engines Division, of Rolls-Royce, Ltd. Other members of the committee are Sir Leonard Lord, K.B.E., President of the Institution; Mr. G. R. Pryor, Chairman of the Council; Mr. H. G. Gregory, Vice-Chairman of the Council; Mr. E. W. Hancock, M.B.E., Sir Walter Puckey, Mr. B. H. Dyson, The Earl of Halsbury, Mr. M. Seaman, Mr. R. Telford, and Mr. F. G. Woollard, M.B.E.

● Over 250 people attended the special series of instructional courses on correct domestic solid-fuel appliance installation, held at Plymouth Technical College from October 31 to November 11 inclusive. The courses were arranged by the Plymouth Joint Service Committee of the Coal Utilisation Council.



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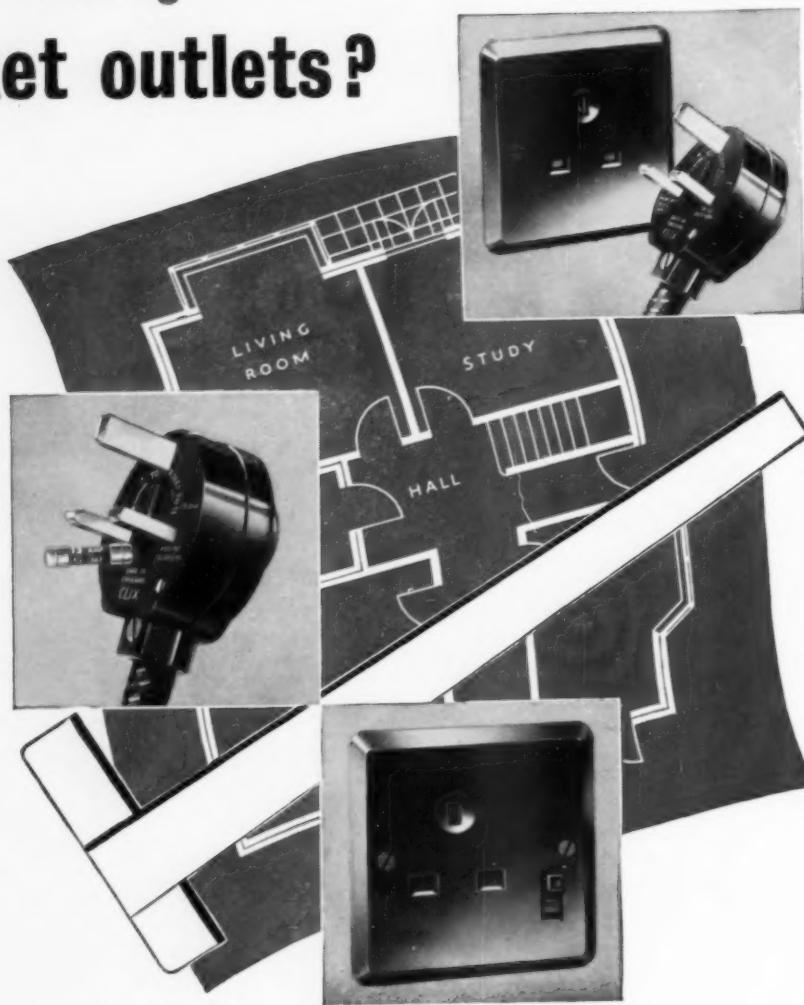
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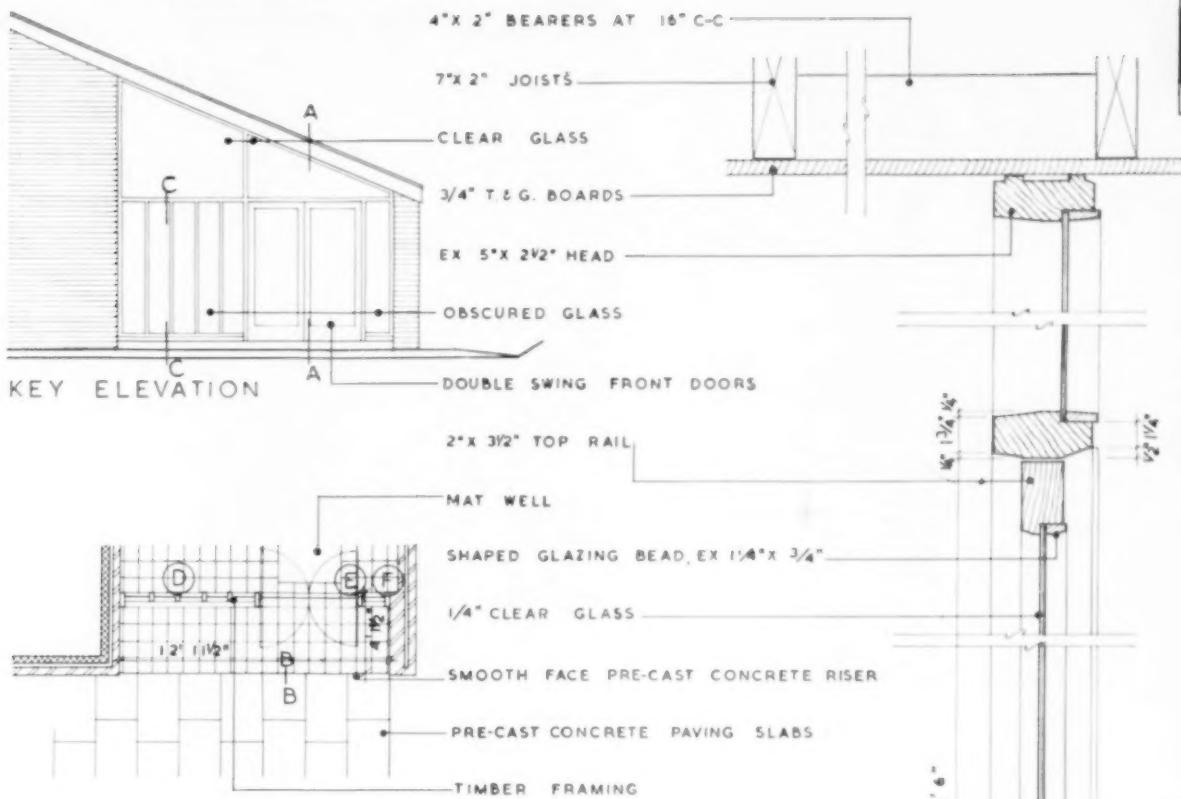
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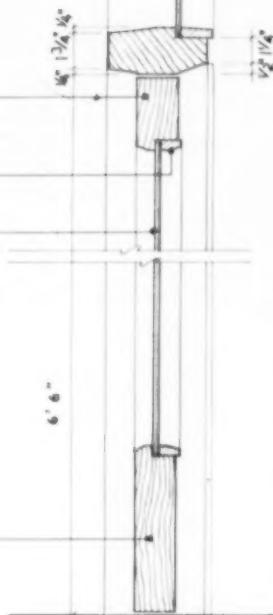
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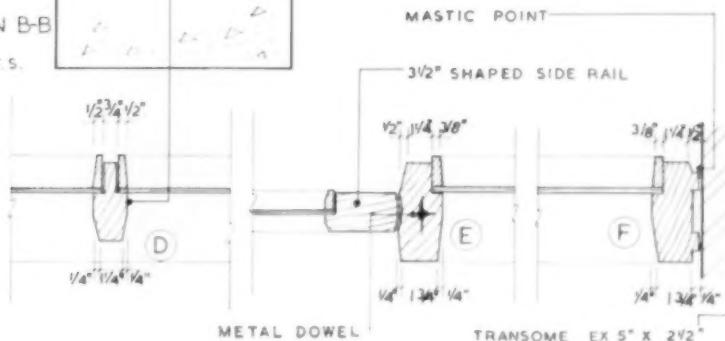


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A



SECTION B-B
• 1/8 F.S.



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SECTION C-C

35

D



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Notes below give basic data of contracts open under locality and authority which are in bold type. References indicate : (a) type of work (b) address for application. Where no town is stated in the

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address it is the same as the locality given in the heading (c) deposit (d) last date of application (e) last date and time for submission of tenders. Full details of contracts marked * are given in the advertisement section.

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ALTON R.C. (a) Provision and erection of two vehicle garages at Alton and Bordon respectively, constructed of precast reinforced concrete framing and covered with corrugated asbestos cement sheets. (b) Council's Engineer, Council Offices, Barton End. (c) January 2.

AMESBURY R.C. (a) Contract No. 1. Erection of 10 outhouses at Amesbury and Woodford, 33 at Bulford and Durrington, 30 at Shrewton, Winterbourne Stoke and Tilshead, and 18 (partially erected) at Amesbury and Allington. (b) Council's Engineer, Redworth House. (c) 1gn. (e) December 22.

AMESBURY R.C. (a) Contract No. 2. Erection of 29 outhouses at Amesbury, 38 at Bulford, 19 at Durrington and 3 at Shrewton. (b) Council's Engineer, Redworth House. (c) 1gn. (e) December 22.

ASHTON - UNDER - LYNE B.C. (a) Erection of 134 flats and maisonettes at Charlestowen. (b) Town Clerk, Town Hall, in writing. (d) December 19.

AYLESBURY R.C. (a) Contract (A) Erection and completion of 5 pairs of three-bedroom and 3 pairs of two-bedroom houses, at Warmstone, Waddesdon, and Contract (B) demolition of pair of cottages and erection and completion of one-bedroom bungalows on the site, and the reconditioning of another pair of cottages, all at Drayton, Beauchamp. (b) Council's Architect, 4 Temple Square. (c) £2 for Contract (A) and 1gn. for Contract (B). (e) December 20.

BARNESLEY B.C. (a) Erection and completion of a branch library at Park House estate. (b) Borough Engineer, Town Hall. (c) 2gns. (e) December 27.

BASILDON U.C. (a) Erection of one terrace of three 3-bedroom houses and six pairs of 3-bedroom houses at Langham Crescent, Billericay. (b) Council's Engineer, 108 High Street, Billericay. (c) 2gns. (d) December 10.

BEDFORDSHIRE EDUCATION COMMITTEE (a) Erection of a new primary junior and infants' school on the Putnoe estate, Goldington. (b) County Architect, Shire Hall. (d) December 19.

BEDFORDSHIRE STANDING JOINT COMMITTEE (a) Erection of a new police station at Ampthill. (b) County Architect, Shire Hall, Bedford. (d) December 20.

BEESTON AND STAPLEFORD U.C. (a) Erection and completion of public conveniences at Chetwynd Road, Chilwell. (b) Council's Surveyor, Town Hall, Beeston. (c) 2gns. (e) December 20.

BLOFIELD AND FLEGG R.C. (a) Erection of four houses at Thurne. (b) Council's Clerk, Council Offices, Acre. (c) 2gns. (e) December 13.

BRADFORD C.C. (a) Erection of one pair of houses with shops attached at Eccleshill South, two pairs of houses with shops attached at Eccleshill North, two single houses with shop attached at Delf Hill, and two single houses with shop attached at Bierley. (b) City Engineer, Town Hall. (c) 2gns. (e) January 3.

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BUCKS C.C. (a) (1) Alterations and extensions at Amersham Grammar School, (2) erection of new primary school at Sherington, near Newport Pagnell, (3) erection of new junior school in "Derwent" construction at Wexham Court Farm Estate, Slough, (4) erection of new junior and infant school at Farmham Royal, Slough, (5) erection of classroom extensions at High Wycombe, Kingswood infant school, (6) extensions at Little Kingshill C. Primary School, (7) extensions at Chenes C. Primary School, (8) extensions at Stoke Mandeville C. Primary School, (9) classroom extensions in "Derwent" construction at Chorley Wood C. Primary School, (10) changing rooms with sanitation at Marlow Foxes Piece Playing Fields, (11) extensions at Beaconsfield Holtsbury Primary School, (12) erection of one pair of nurses' houses with a district room and two garages at Slough, Langley. (b) County Architect, County Offices, Aylesbury. (c) 2gns. each contract. (e) 1-11 January 16, 12 January 9.

CHAILEY R.C. (a) Alterations to pre-war council houses at Newick, North Chailey, Barcombe, Cooksbridge, East Chiltington and Streart. (b) Council's Surveyor, Council Offices, Lewes House, Lewes. (c) £2 by cheque, payable to Council.

CHEPSTOW R.C. (a) Demolition of the existing bungalows and erection on the existing slabs of 26 traditional type houses, together with 8 bungalows at Rogiet. (b) Messrs. Thomas and Morgan and Partners, 23 Gelliawstad Road, Pontypridd. (c) 5gns. (e) December 29.

DARTFORD B.C. (a) Erection of 36 two-bedroom houses and 36 three-bedroom houses at Temple Hill Neighbourhood Unit, site 7. (b) Town Clerk, Council Offices. (c) 2gns. (e) January 9.

DUNHEVED B.C. (a) Erection of 5 bungalows and 14 flats at Tavistock Road site, Launceston. (b) Messrs. G. W. Parkes Lees and Son, Broad Street, Launceston, in writing. (d) December 10.

DURHAM C.C. (a) Erection of proposed retiring-room and cubicles, etc., at Assize Court. (b) County Architect, South Street. (d) December 14.

EAST BARNET U.C. (a) Contract No. 809. Erection of 8 flats in two and three storey construction, together with all ancillary works, at Brunswick Park Road-Waterfall Road. (b) Council's Engineer, Town Hall, Station Road, New Barnet. (c) 2gns. (e) January 14.

EAST SUFFOLK C.C. (a) Erection of new secondary school at Halesworth. Valued between £100,000 and £110,000. (b) County Architect, County Hall, Ipswich. (d) December 16. (e) January 16.

EIRE — ARKLOW DEVELOPMENT CO. LTD. (a) Erection of an entertainment centre, with sundry site works, at Seaview Avenue, North Beach. (b) Gabriel M. Cleere, 11 Ely Place, Dublin. (c) 10gns. (e) January 4.

EIRE — CORK C.C. (a) Erection of 115 flats and maisonettes at Wolfe Tone Street. (b) E. P. O'Flynn, Trinity Chambers, 60 South Mall. (c) 10gns. (e) December 20.

HEMEL HEMPSTEAD R.C. (a) Erection of 10 cottages in four blocks of two and one block of four cottages at Croft Lane, Chipperfield. (b) Council's Engineer, Council Offices, The Bury, Bury Road. (c) 2gns. (e) January 2.

ISLE OF ELY C.C. (a) Erection of four bungalows and three sets of farm buildings at Willow Row Farms, Ten Mile Bank, Littleport. (b) County Architect, County Hall, March, in writing. (c) 2 gns, by cheque, payable to Council. (d) December 13. (e) January 7.

LINCOLN C.C. — PARTS OF KESTEVEN. (a) Erection of first instalment of proposed Secondary Modern School at Market Deeping. (b) County Architect, County Offices, Sleaford. (e) January 23.

LINCOLN C.C. — PARTS OF KESTEVEN. (a) Upgrading of the main block of the "St. George's" Residential Establishment, Stamford. (b) County Architect, County Offices, Sleaford. (e) January 20.

LONDON—ACTON B.C. (a) Alterations and additions to the Central Public Library, High Street, including the provision of an additional floor. (b) Borough Engineer, Town Hall, W.3. (e) December 19.

LUTON CORPORATION. (a) Erection of a block of six shops and maisonettes at Abbotts Wood Road. (b) Borough Engineer, Town Hall. (c) 2gns. (e) December 31.

MANCHESTER CORPORATION. (a) Contract No. 238. Erection of nine aged persons' dwellings at Catterick Hall estate, Didsbury, and Contract No. 239, erection of four aged persons' dwellings at Ravensbury Street, Clayton. (b) Director of Housing, Town Hall, 2. (e) December 21.

NORFOLK C.C. (a) Erection of divisional surveyor's office and stores at Horsham, St. Faith's. (b) County Architect, 27 Thorpe Road, Norwich. (d) December 12.

RAMSEY U.C. (a) Erection of four pairs of two-bedroom houses and five pairs of three-bedroom houses at Westfield. (b) Council's Clerk, Council Offices, 36 Great Whyte. (c) 2gns. (e) December 28.

ST. HELENS B.C. (a) Erection of two pairs of semi-detached houses for police officers at Scholes Lane, St. Helens (Contract No. 2078). (b) Borough Engineer, Town Hall. (c) 2gns. (e) January 9.

SCOTLAND — RUTHERGLEN ROYAL B.C. (a) Erection of 5 shops at Blairbeth housing scheme. All or separate trades. (b) Burgh Surveyor, Town Hall Buildings. (d) December 15.

SHOREHAM-BY-SEA U.C. (a) Erection of a public convenience at Buckingham Park, Upper Shoreham Road. (b) Council's Engineer, 31 John Street. (c) 2gns. (e) January 14.

SOMERSET EDUCATION COMMITTEE. (a) Erection of Combe Down Secondary Modern School. (b) Chief Education Officer, County Education Office, Trull Road, Taunton, with an assurance that the applicant has necessary financial and material resources and organisation to undertake the work. (c) 2 gns. (d) December 16.

THETFORD B.C. (a) Conversion of existing buildings at the Market Place to form public conveniences and bus shelter. (b) Messrs. Elliott and Brown, Stanley House, Pelham Road, Nottingham. (c) 3gns. by cheque, payable to Borough of Thetford. (e) December 19.

WEST RIDING OF YORKSHIRE C.C. (a) Provision of additional sanitary accommodation in the main block at the County Welfare establishment, "Netherfields," Penistone. (b) County Architect, "Bishopsgarth," Westfield Road, Wakefield. (e) December 19.

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WEST RIDING OF YORKSHIRE C.C.

(a) Erection of scullery and alterations to cloakroom, drainage, etc., at Mexborough Scholfield Street Junior Boys' School. (b) County Architect, Bishopsgarth, Westfield Road, Wakefield. (c) £2. (d) December 12. (e) December 19.

WEST RIDING OF YORKSHIRE C.C.

(a) Erection of caretaker's house at Thrybergh Secondary School. (b) County Architect, Bishopsgarth, Westfield Road, Wakefield. (c) 2gns. (d) December 12. (e) December 19.

WOKING U.C. (a) Erection of a pair of houses on the site of the extension of Wisley Sewage Disposal Works, Wisley Road, Wisley. (b) Council's Engineer, Council Offices. (c) 2gns. (e) January 2.

PLACED

Notes on contracts placed state locality and authority in bold type with (1) type of work, (2) site, (3) name of contractor and address, (4) amount of tender or estimate. ↑ denotes that work may not start pending final acceptance, or obtaining of licence, or modification of tenders, etc.

SLOUGH B.C. (1) 130 houses. (2) Cippenham Lane Estate. (3) William Hartley and Son, Wexham, Slough. (4) £206,400.

EAST SUSSEX C.C. (1) Ringmer Secondary School. (2) Ringmer, Lewes. (3) Ringmer Building Works Ltd., Lewes. (4) £101,123. (1) Extensions. (2) Rye

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N.E. MET. REGIONAL HOSPITAL BOARD. (1) Casualty department. (2) North Middlesex Hospital. (3) Prestige and Co. Ltd., Grosvenor Road, London, S.W.1. (4) £57,607.

FARNWORTH (LANCS) B.C. (1) 54 houses. (2) Plodder Lane. (3) E. E. Davies Ltd., Bank Street, Farnworth. **BERMONSEY B.C.** (1) 57 flats. (2) Rosebery Street. (3) Direct Labour. (4) £140,152.

NORTH RIDING C.C. (1) First installation of Grammar and Modern Schools. (2) Stokesley. (3) F. Shepherd and Son Ltd., Blue Bridge Lane, York. (4) £162,829.

WALTHAMSTOW B.C. (1) 31 flats, 11 shops and offices. (2) Church Hill. (3) Davies Bros. (Buckhurst Hill) Ltd., 167 Queens Road, Buckhurst Hill, Essex. (4) £150,000.

NOFOLK C.C. (1) Secondary School. (2) Hoveton. (3) Tooley and Youngs, Stalham, Norfolk. (4) £106,524.

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2. Spreading STILWOOL insulation between the joists.
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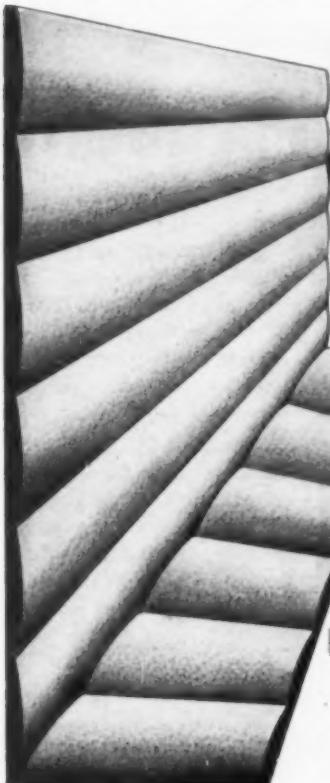
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of the WIDE REED
design.*

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(CASTEX)
reeded
hardboard

Durable, hard-surfaced "NEOCAST" is hardboard... PLUS. It offers an excellent surface for paint, enamel, varnish and cellulose finishes and is ideal for natural clear polishing.

It is cleanly and easily worked with ordinary carpenter's tools; can be fixed by normal woodworking methods, and its fine, smooth surface will adapt itself to curvatures as easily as it will to flat areas. Its fine, clean-cut edges, too, meet perfectly without need for cover strips or joint mouldings.

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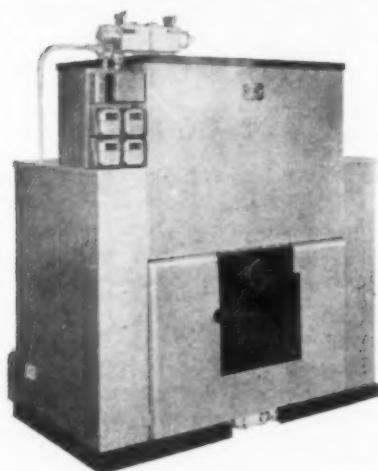
J. EIDELMAN

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"NEOCAST" will flameproof up to
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Announcing the New TRIANCO Boilers

A revelation in efficiency,
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Consult us on your heating problems — our highly trained technicians will assist you. These boilers are made under pending British and foreign patents and exclusive licences.



After prolonged research and exhaustive tests Trianco Boilers, both domestic and industrial types, now provide the most efficient means of ensuring the maximum heat release from solid fuel of various types. The new models, employing the newest techniques in operation, are scientifically designed and provide the complete answer to economical, efficient, controlled heating.

Efficient. Automatic thermostatic control—heat output only when required. Highest efficiency factor due to complete fuel combustion at high temperatures ensuring smokeless combustion.

Easy to operate. Fuel is gravity fed from hopper. Declinking without dust or loss of heat by hand, lever, or automatically in the larger types. Uses wider variety of fuels than has hitherto been found possible on this type of boiler—requires minimum of attention and in industrial types can be fitted with conveyor system for fuel feed and ash removal.

TRIANCO
automatic boilers



Adaptable

These are types to provide central heating and hot water for the average home or larger types to heat and provide hot water for hotels, a block of flats, cinemas, offices, or factories.

AN OPEN AND SHUT CASE for ESAVIAN (No. 9)



The boardroom and annex of the Glass Manufacturers' Federation.
Architect : Lady Margaret Casson, A.R.I.B.A. Sliding partitions
by Esavian.

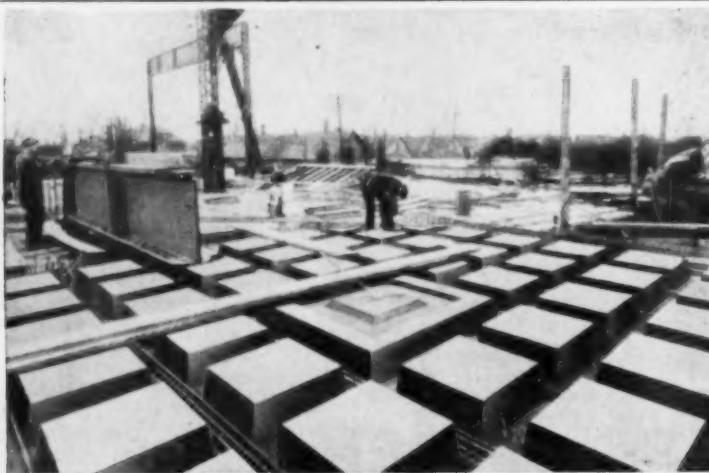
Esavian Ltd., Esavian Works, Stevenage, Herts. Tel: Stevenage 500
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FOR FOLDING & SLIDING DOORS, WINDOWS, PARTITIONS AND SCREENS



$\frac{1}{4}$ " Masonite Tempered Preswood used as a form liner on all exposed concrete surfaces. Note Two-way joist system and the adaptability of Masonite Tempered Preswood to this system.

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(Made in Sweden)
STANDARD
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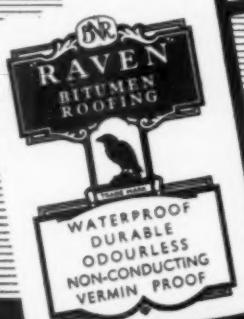
It has been used successfully since 1930 for all types of poured concrete work, including columns, verticals, soffits, or pre-cast work, all with consistent smooth surfaces after repeated uses.

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Roofings and
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One piece sink units with stainless steel drainers and bowls. No joints to harbour dirt and infection. The most durable form of construction, will last a life time. The whole satin finished for ease of cleaning, long wear without marking, and free from reflective glare.

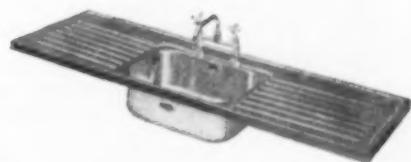
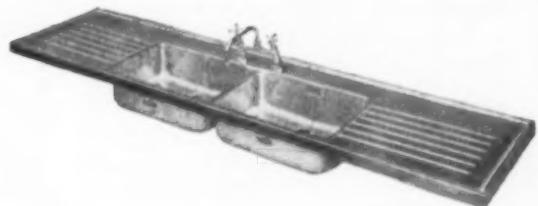
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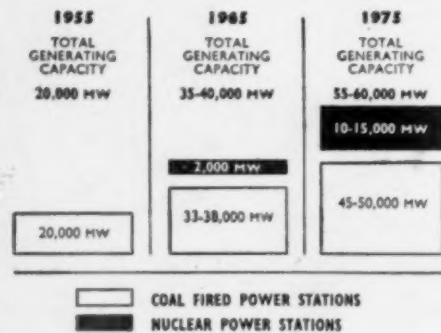
Head Office:— Ring Road, Lower Wortley, Leeds, 12.

London Office:— 14, Great Peter Street, S.W.1

England



Electricity from Nuclear Energy



20 years' development programme

Britain's nuclear power station construction programme provides for twelve such stations to be built at a cost of some £300 million in the next ten years.

The First Ten Years

Work will start on the first two nuclear power stations in 1957. These will each have two gas-cooled reactors and the stations will be in operation by 1960/61. Two further gas-cooled reactor stations — each housing two reactors of improved type — to be begun in 1958/9 will come into service by 1963. The output of these four stations will be between 400,000 and 800,000 kilowatts.

The construction of two groups of four stations each will begin in 1960 and 1961/2 and they will be supplying electricity to the Grid by 1963/4 and 1965 respectively. The first group of stations will probably have one gas-cooled reactor each. The second group will probably utilise liquid-cooled reactors — one high rated reactor each. These stations will add well over 1,000,000 kilowatts to the nation's power resources.

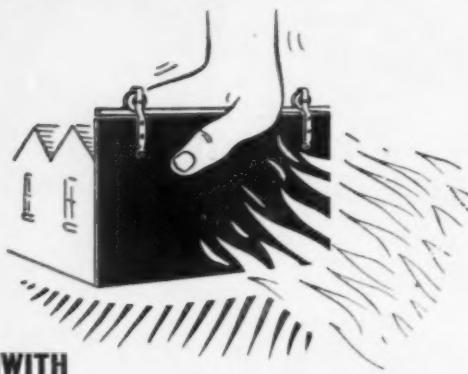
The Second Ten Years

By 1975, it is anticipated that nuclear reactor power stations in Britain will have an aggregate installed capacity of between 10,000,000 and 15,000,000 kilowatts; and about half the national consumption of electricity will be derived from nuclear energy.

CEA
7 YEARS' PROGRESS 58 NEW POWER STATIONS
10,000,000 ADDITIONAL HORSEPOWER INSTALLED



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"XL-TALBOT" CONTINUOUS BURNING COMBINATION GRATE



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The above illustration shows this model with cast iron Architrave, Curb & Hearth-plate, which shows a distinct saving on the traditional mantel surround. This model can also be supplied with Tiled doors, Hearth Tiles and all Tiled Surround.

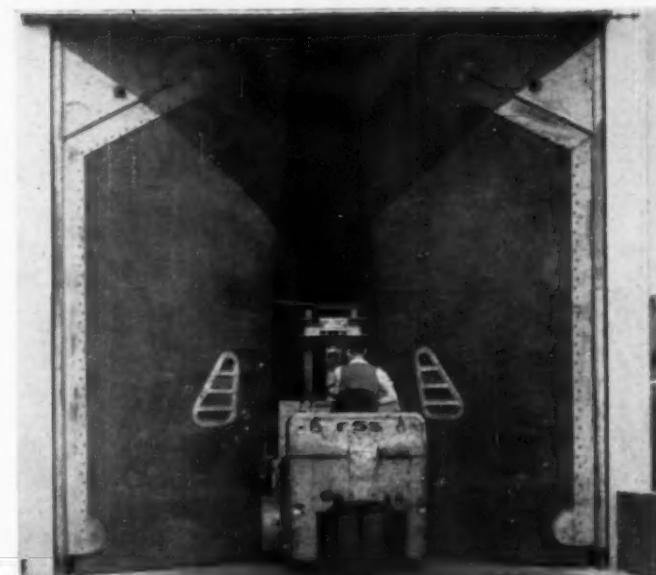
* Approved by the Ministry of Fuel and Power *

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RUBBER CRASH DOORS



**Now in sizes
up to 20' and over**

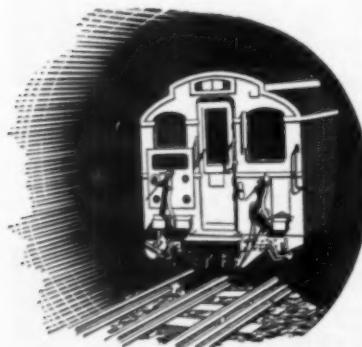
Rubber crash doors solve the problem of mechanical-handling vehicles and road vehicles driving into the works. They keep the draught out and the heat in and avoid damage to doors and vehicles with a minimum of maintenance.

Standard Internal doors up to 10' x 10'. Heavy Duty External doors up to 14' x 20' made from special $\frac{5}{16}$ " or $\frac{1}{2}$ " 9-ply rubber.

Illustrated on left is one of two heavy duty doors installed for the Northern Aluminium Company Limited, Newport, Mon.

MANCUNA ENGINEERING LIMITED

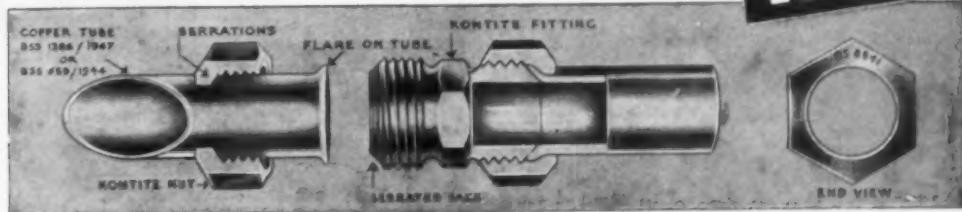
Denton, Manchester. Telephone DENton 3965/6. Also at London, Birmingham, Bath, Edinburgh, Leeds, and Toronto, Canada.



Tube Efficiency!

'Kontite' underground fittings give increased strength to the joint because the serrated end of the fitting body bites into the tube. All bodies and nuts are made of GUNMETAL, thus reducing corrosion—and increasing efficiency.

Full details of 'Kontite'
Underground Fittings will be
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**keep control of pure air with
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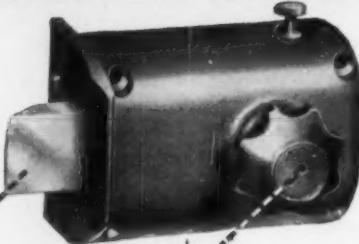
ASHTON-UNDER-LYNE, Lancashire. Tel.: AShton-under-Lyne 2281/2/3

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How burglars are baffled by **REMLOCK**



This 1" deadbolt provides an automatic deadlock every time the door is shut, and cannot be forced back. Only the proper key can release it.



This knob is controlled by an interior key mechanism. It controls the deadbolt from the inside and cannot be turned unless released by the proper key. Defeats the broken-glass-panel intruder.

The cylinder back plate is fixed in the lock case to foil attempts to turn the cylinder.

Complete with screws, **39/6**
striking plate, and keys **25/-**
Standard model (without inside key mechanism)

The above prices are subject to generous trade discounts.

The REMLOCK incorporates the constant mesh cam and track principle used in precision engineering. Mechanical movement is smooth. Strength is exceptional—has successfully passed extremely tough 'destruction' tests. Key mechanism is of 5 pin-tumbler type.

It's a safe plan to specify REMLOCK

REMPLOY LIMITED, 25 BUCKINGHAM GATE, LONDON, S.W.1

BATLEY CONCRETE GARAGES FOR EVERY CAR—AND EVERY SITE



FROM £46
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SINGLE GARAGES

Available in widths of 8' 3" or 11'; clear height of 6' 3" or 7' 6". Extendable in length.

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Designed for building on to the house or existing wall. Width required only 8'. Rear door available.



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One, two or more supplied in a block. Will provide an unequalled investment.



FROM £55
OR TERMS

- Up and Over or hinged doors available
- Portable yet permanent • Easily erected
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Ashathene is being increasingly used for first class electrical installations in domestic dwellings.



Ashathene provides a safe and permanent installation unaffected by sunlight, ozone, corrosive atmosphere, etc.

Ashathene CABLE

CUTS THE COST

Ashathene cables are manufactured strictly in accordance with B.S.S. 1557 to ensure first class quality. Besides being competitively priced, these cables enable economies to be made in both material and labour. Ashathene may be laid directly in plaster and cement without detrimental effect and expensive conduit and channels are largely eliminated.



Please write for leaflets and prices.

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No other insulating roofing material has greater structural strength. Supplied in large, lightweight, easily handled units; fire-resistant, sound absorbing, their attractive surface requires no ceiling-finish.

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WOOD WOOL SLABS
are the BEST

REBATED TYPE

THERMACOUST β^* Rebated Slabs provide higher overall insulation. They are specially designed for buildings where the atmosphere is exceptionally warm or humid. They are rebated to take 1" cork strips to prevent condensation on the steel channels.

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Timber framed.
Unit construction.
Simple and quick in erection.
Weatherboard or asbestos walls.
8' 10' 12' 15' 20' 25' 30' WIDE
7' 8' 10' HIGH TO EAVES

As supplied to:
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STEEL FRAMED BUILDINGS
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FOR INDUSTRIAL USES

Specify THORNS



Photograph by courtesy of Bedford Group Hospital Management Committee.

Enquiries invited. Write for details and prices.

J. THORN & SONS LIMITED (Dept. 113)
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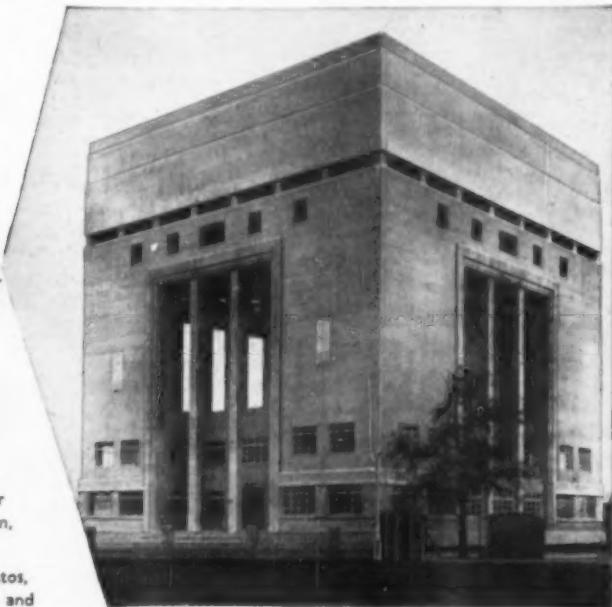
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Success!

FABRIGUARD was used on the internal decoration of CHATTERTON TOWER, Spalding's 750,000 gallon water tower, also the Swimming Pool, Bourne Pumping Station, etc., giving complete satisfaction.

Dries quickly on old or new plaster, cement, asbestos, cement, brickwork, etc. Alkali and Acid resisting - Petrol and Oil proof - Fire retarding and many other excellent qualities.

Send for full particulars to:-



Photograph by courtesy of Spalding U.D.C. Water Engineer and Manager,
Peter Lamont, M.A., A.H.I.C.E., M.I.W.E.

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OFFICIAL ANNOUNCEMENTS

APPOINTMENTS • CONTRACTS TENDERS

Rate 1/6 per line, minimum 3/-

Close for press 1st post Monday for following Thursday Issue

NOTICE

THE ISSUE DATED DECEMBER 22 WILL CLOSE FOR PRESS FIRST POST FRIDAY, DECEMBER 16. DECEMBER 29 ISSUE FIRST POST, THURSDAY DECEMBER 22.

APPOINTMENTS

The enclosure of persons answering these advertisements must be made through the local office of the Ministry of Labour and National Service, etc. If the applicant is a man aged 18-64 or a woman aged 18-59 inclusive, unless he or she or the employer is excepted from the provisions of The Notification of Vacancies Order, 1952.

COUNTY BOROUGH OF WEST HAM

BOROUGH ARCHITECT AND PLANNING OFFICER'S DEPARTMENT

THERE are vacancies on the permanent staff for:-

- (a) SENIOR ASSISTANT ARCHITECTS — V (£750-£900);
- (b) SENIOR ASSISTANT ARCHITECTS — IV (£675-£825);
- (c) ARCHITECTURAL ASSISTANT — I/II (£500-£640);
- (d) CHIEF ASSISTANT, PLANNING — VII (£900-£1,100);
- (e) SENIOR ASSISTANT, PLANNING — IV (£675-£825);
- (f) PLANNING ASSISTANT—I/II (£500-£640). London Allowance in addition.

Posts (a) and (b) applicants should be A.R.I.B.A. or Registered Architect; (c) Inter R.I.B.A. standard with office experience; (d) must be A.M.T.P.I. and additional qualification—A.R.I.B.A. or A.R.I.C.S.—as advantage. Responsible for Planning Administration generally. Experience in replanning of blitzed or obsolete urban areas required. (e) Architect/Planner; (f) experienced in general planning work.

Application forms and details from Borough Architect and Planning Officer, Thomas E. North, Ofc. E.R.I.B.A., Dist. T.P. M.T.P.I., 70 West Ham Lane, Stratford, E.15. Returnable by Tuesday, 20th December, 1955.

ATOMIC ENERGY RESEARCH ESTABLISHMENT, HARWELL

has vacancies for

ARCHITECTURAL ASSISTANTS

in its New Works Group, under the control of the Chief Architect.

(i) To be in charge of a Drawing Office, preparing sketch plans and working drawings for all kinds of buildings, some of a complex nature; programming all work in Drawing Office, and Working in conjunction with consultants' Drawing Office Staff (reference 449).

(ii) To be in charge of a Drawing Office Group, preparing sketch plans and working drawings for all kinds of buildings, some of a complex nature (reference 450).

Applicants should be up to final R.I.B.A. standard and should have had wide experience of the duties outlined above. For (i) previous experience in Drawing Office Management will be expected.

Salary, according to age, qualifications and experience, within the scales:

(i) Senior Architectural Assistant: £873-£1,080 per annum.

(ii) Leading Architectural Assistant: £743-£873 per annum.

Contributory superannuation scheme.

Send POST CARD for application form to Establishment Officer, U.K. Atomic Energy Authority, A.E.R.E., Harwell, Didcot, Berks, quoting appropriate reference.

APPOINTMENTS—contd.**IMPERIAL CHEMICAL INDUSTRIES LIMITED, METALS DIVISION**

invites applications from
DRAUGHTSMEN

to fill the following permanent positions

1. Senior Design Draughtsman with experience of heavy hydraulics, e.g. design and installation of extrusion presses, pumps, accumulators, pipework, valves, etc., operating at working pressures of up to 5,000 p.s.i. H.N.C. qualifications preferred, but sound practical knowledge essential.
2. Senior Design Draughtsman with good general knowledge of layout and design of mechanical plant, e.g. rolling mills and ancillaries, drawbenches, special purpose plant, materials, handling equipment, etc. Work is widely varied and interesting. H.N.C. qualification preferred, but sound design experience essential.
3. Senior Design Draughtsman with experience of the layout and design of heating and ventilation installations for industrial buildings including offices. A.M.I.H. & V.E. or equivalent qualification preferred.
4. Senior Design Draughtsman for interesting layout and design work connected with instrument installations applied to wide range of plant producing non-ferrous metals. Experience to include working knowledge of electronics, electric and pneumatic control systems. H.N.C. qualifications preferred.

5. Senior Design Draughtsman Electrical experienced in layout of industrial power distribution, automatic control gear and sub-station design. Knowledge of lighting installations an advantage. Work includes installing covering a wide range of plant and buildings connected with the production of non-ferrous metals. H.N.C. qualifications preferred.
6. Architectural Assistant with good practical experience required for design and detail of widely varied technical and administrative projects. Minimum qualification Inter. R.I.B.A. preferred. These positions carry good commencing salaries and there are excellent prospects for advancement for men with initiative and ability.

Financial assistance towards removal expenses are available for married men. Excellent conditions of employment include Staff Pension Fund, Employees' Profit Sharing Scheme, etc. Application forms may be obtained from the Staff Manager, I.C.I. Metals Division, Kynoch Works, Witton, Birmingham 6, quoting DR/7. [1816]

ATOMIC ENERGY RESEARCH ESTABLISHMENT, HARWELL

has vacancies for

ARCHITECTS

in its New Works Group, under the control of the Chief Architect.

Duties will include the design and construction of all kinds of buildings, many being of a complex and specialised nature; the preparation of specifications and the arrangement of contracts, and working in conjunction with consultants.

Applicants should be associated members of the Royal Institute of British Architects or have equivalent qualifications and should have had wide experience of the duties outlined above.

Salary will be assessed, according to age, qualifications and experience within one of the following scales:

Senior Architect: £1,490-£1,685 per annum.

Architect: £1,130-£1,435 per annum.

Contributory superannuation scheme.

Send POST CARD for application form to Establishment Officer, U.K. Atomic Energy

Authority, A.E.R.E., Harwell, Didcot, Berks, quoting reference 443. [1818]

BRITISH RAILWAYS EASTERN REGION**ASSISTANT ARCHITECTS**

required in the office of the Architect, Eastern Region, King's Cross Station, for work in connection with the Modernisation Plan. Salary ranges, (1) £815-£90, (2) £720-£780. Applicants for (1) should be qualified with practical experience and for (2) should preferably be qualified or have passed Inter. R.I.B.A. with practical experience. Responsibility and prospects for entrants with ability in contemporary design and administration. Five-day week; concessionary rail travel and permanency after probationary period. Apply in writing to Chief Civil Engineer, British Railways, Eastern Region, King's Cross Station, London, N.1, giving full particulars as to age, education, training and experience, quoting Post 1280. [1806]

APPOINTMENTS—contd.**CITY OF BIRMINGHAM****CITY ARCHITECT'S DEPARTMENT**

APPLICATIONS are invited for the appointment of a Senior Assistant Architect as Group Leader in the Housing Design Section, which is carrying out a large Housing programme in suburban and central redevelopment areas, including multi-storey flats in both traditional and new-traditional construction, garages and large shopping centres.

The appointment will be within Grade A.P.T. VI (£825-£1,000 per annum), commencing at a salary according to experience.

Applicants must be Associate Members of the R.I.B.A., or hold an equivalent qualification, and, as the Architect appointed will be primarily responsible for the basic designs of redevelopment areas, the possession of a Town Planning qualification will be an advantage.

The post is permanent, superannuable, subject to a medical examination and to one month's notice on either side.

Applications stating age, present position and salary, qualifications and experience, together with the names of two persons to whom reference can be made, should reach the undersigned not later than December 28, 1955.

Canvassing disqualifies.

A. G. SHEPPARD FIDLER,
City Architect.

Civic Centre,

BIRMINGHAM, 1.

[1813]

LONDON ELECTRICITY BOARD**STRUCTURAL ASSISTANTS AND STRUCTURAL DRAUGHTSMEN**

APPLICATIONS are invited for the above positions in the Construction Branch of the Chief Engineer's Department in Central London.

Applicants for the positions of Structural Assistants in the Civil Engineer's Section should experience in the design and detailing of reinforced concrete, and/or steel framed superstructures and foundations.

Applicants for the positions of Structural Draughtsmen should have a knowledge of building construction requirements and/or some experience in detailing reinforced concrete or steel structures.

The posts are graded under Schedule 'D', National Joint Board agreement, as Grade 5 - £672 to £777 and Grade 6 - £535 10s. to £661 10s. per annum respectively, inclusive of London Allowance. Commencing salaries will be dependent on qualifications and experience.

Application forms, obtainable from Personnel Officer, 46/7, New Broad Street, London, E.C.2., to be returned completed by December 27, 1955. Please enclose addressed envelope and quote reference: V/2003/AA. [1810]

COUNTY BOROUGH OF BURY

APPLICATIONS invited from suitably qualified persons for position of Architectural Assistant, Borough Engineer's Department, Special Grade (£650-£750).

Applications, stating age, details of training, qualifications and experience, together with the names and addresses of two referees must reach me not later than 17th December.

EDWARD S. SMITH,
Town Clerk.

Town Hall,
BURY,
3rd December, 1955.

[1819]

CITY OF LEICESTER**EDUCATION COMMITTEE
COLLEGE OF ART
School of Architecture**

APPLICATIONS are invited for the post of full-time Instructor. Candidates should be registered architects holding a Degree or Diploma of a Recognised School.

Subject to the usual conditions relating to full-time service the person appointed will be given opportunities to continue his professional practice.

Salary—Burham Scale, Grade II, £525 x £25 to £820, with appropriate allowance for approved professional and teaching experience, war service and graduate training.

Applications (no form) should be sent to the Registrar, College of Art, The Newarke, Leicester, within two weeks of the appearance of this advertisement.

E. THOMAS,
Director of Education.
[1820]

APPOINTMENTS—contd.

BOROUGH OF LEYTON
(Non-County Borough in County of Essex. Population 103,200. R.V. £784,110).

APPLICATIONS are invited for the following permanent appointments at salaries in accordance with the National Scale indicated:

(a) TWO ASSISTANT ARCHITECTS. A.P.T. Grade V £780-£830 per annum;

(b) GENERAL ARCHITECTURAL ASSISTANT, A.P.T. Grade III-IV £630-£855 per annum.

The above salaries are inclusive of London Weighting (£30) which is reduced according to scale where the age of the successful applicant is less than 26 years. The commencing salaries will be fixed at a point in the scale according to the qualifications and experience of the successful candidate.

Candidates for appointments (a) must be Associates of the Royal Institute of British Architects and must have considerable experience in contemporary design and the construction and supervision of multi-storey flats. Candidates appointed will be employed in connection with the Corporation's extensive programme for Redevelopment Areas.

Candidates for appointment (b) must be Registered Architects and should have good experience in the design, construction and erection of public buildings. The successful candidate will be primarily engaged on the completion of a project for a Central Library. Housing accommodation may be made available if required.

Alternate Saturday mornings are free of duty and certain facilities are available in the Town Hall.

Details of the above appointments and forms of application may be obtained from Mr. H. D. Peake, M.Sc. (Eng.), Borough Engineer and Surveyor, Town Hall, Leyton, E.10, to whom they should be returned not later than WEDNESDAY, 26TH DECEMBER, 1955.

D. J. OSBORNE,
Town Clerk.

[1821]

CITY OF BIRMINGHAM

CITY ARCHITECT'S DEPARTMENT

APPLICATIONS are invited for the following appointments:

Quantity Surveyors — Grade A.P.T. IV — £675-£825 per annum;

Quantity Surveyors — Grade A.P.T. III — £600-£725 per annum;

Quantity Surveyor — Grade A.P.T. I — £580-£580 per annum.

Applicants for Grade A.P.T. IV must have passed the Final Examination, and for Grades A.P.T. I and A.P.T. III, the Intermediate Examination of the R.I.C.S. (Quantity Section), or hold equivalent qualifications. The commencing salaries in the grades will be according to capabilities and experience.

The posts are permanent, superannuable, subject to a medical examination, and to one month's notice on either side.

Applications, endorsed with the heading of the post, setting out present position and salary, qualifications and experience, together with the names of two persons to whom reference can be made, should reach the undersigned not later than 28th December, 1955.

Canvassing disqualifies.

A. G. SHEPPARD FIDLER,

Civic Centre,
BIRMINGHAM, 1.

[1824]

MISCELLANEOUS SECTION

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ARCHITECTURAL APPOINTMENTS VACANT

The engagement of persons answering these advertisements must be made through the local office of the Ministry of Labour and National Service, etc., if the applicant is a man aged 18-64 or a woman aged 18-59 inclusive, unless he or she or the employer is excepted from the provisions of The Notification of Vacancies Order, 1952.

Architects' Co-partnership require qualified Assistant with experience—Write 44, Charlotte Street, London, W.1., or telephone Langham 5791. [1802]

Architectural Assistants, £600 to £1,000—Knapton & Deane, 121A, Newgate Street, E.C.1. MON 9080.

ARCHITECTURAL APPOINTMENTS VACANT—contd.

Architects' Co-partnership require unmarried, qualified, experienced assistant in their Lagos office. Maximum tour 14 months. Flat provided—Write 44, Charlotte Street, London, W.1., or telephone Langham 5791. [1801]

Architects' Progressive Midlands firm have vacancies for one senior and two junior Assistants, either individually or as a group. Good class practice, varied and interesting Educational, Industrial and Ecclesiastical work. Highest references essential for these positions having excellent prospects. R.C. preferred but not essential. Apply with full particulars, age, training, experience, salary, etc., prior to personal interview to—Box No. 541, Mundy, Gilbert and Troman, 86 New Street, Birmingham. [1761]

BASIL Ward requires an Architectural Assistant between Intermediate and Final Standard, preferably with not less than one year's office experience. Salary to be agreed—Apply 32 Wigmore Street, London, W.1., or telephone Welbeck 1409. [1805]

Architectural Assistants, approaching Intermediate stage, required. Up to £500 p.a. Senior Assistants also required—D. Paskett Marshall, F.R.I.B.A., 59 Gordon Square, W.C.1. MUS. 7176. [1800]

Asistant Architect required for Cowes, I.O.W. office. Final standard or qualified, preferably with office experience. Schools, industrial and miscellaneous works.

Apply: Howard V. Lobb & Partners, 16, Bath Road, Cowes, I.O.W. [1811]

British Railways, London Midland Region. Architectural Assistants required in the Regional Architect's Office. Should be Associates of the R.I.B.A., must have keen interest in contemporary design and knowledge of modern structural technique. Salary £815 - £850 per annum. Five-day week. Residential and other traveling facilities available—Apply in writing, giving particulars of age, qualifications and experience, to the Chief Civil Engineer, British Railways, London Midland Region, 5A, Euston Grove, London, N.W.1. [1808]

BUSY London Office requires 2 Architectural Assistants, approximately Intermediate standard or upwards. Also requires one Assistant with considerable perspective experience, particularly able to do quick interior colour sketches. 5-day week, good salaries—Lewis Solomon, Son & Joseph, 21 Bloomsbury Way, W.C.1. HOL 5108 or 7082. [1804]

Architectural Assistant of R.I.B.A. Intermediate standard required in Architect's department of Estate Developers in the outer London South-Eastern area, engaged on private residential development, shops, etc. Salary in accordance with experience—Write stating age, experience and salary required to Box 7760, c/o A. & B. N. [1770]

Estimator and Quantity Surveyor required for Works Engineer's Department, able to assist in the preparation of estimates for general factory building works and preferably with a knowledge of factory services and plant installations—Apply stating full details of age, experience and approximate salary expected to Reference EQS. Personnel Manager, Armstrong Siddeley Motors, Parkside, Coventry. [1783]

Architectural Assistants, up to Final Standard, required for design work on home and tropical buildings. Salary according to experience—Apply: E. J. D. Mansfield, A.R.I.B.A., Sir William Halcrow & Partners, Stanhope House, 47 Park Lane, London, W.1. [1807]

SCHERRER and HICKS require a number of Architectural Assistants immediately. Salary £400 - £750 p.a. according to experience. Five-day week, 1½ hour lunchtime vouchers—Write 19 Cavendish Square, W.1. or telephone Museum 1105. [1805]

Architectural Assistant, approximately Intermediate standard required in Guildford and London offices. Varied work on contemporary designs. Time for study—Apply: Browning & Turner, 163 High Street, Guildford. Phone Guildford 2824. [1822]

Orman & Partners require experienced Architectural Assistants for their Cyprus office. Minimum standard Intermediate R.I.B.A. Passage paid and salary by arrangement—Apply, stating age and experience, to 23A, High Street, Guildford, Surrey. Telephone 67688-9. [1823]

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EDUCATION COMMITTEE

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W. G. STONE,
Director of Education
[1826]

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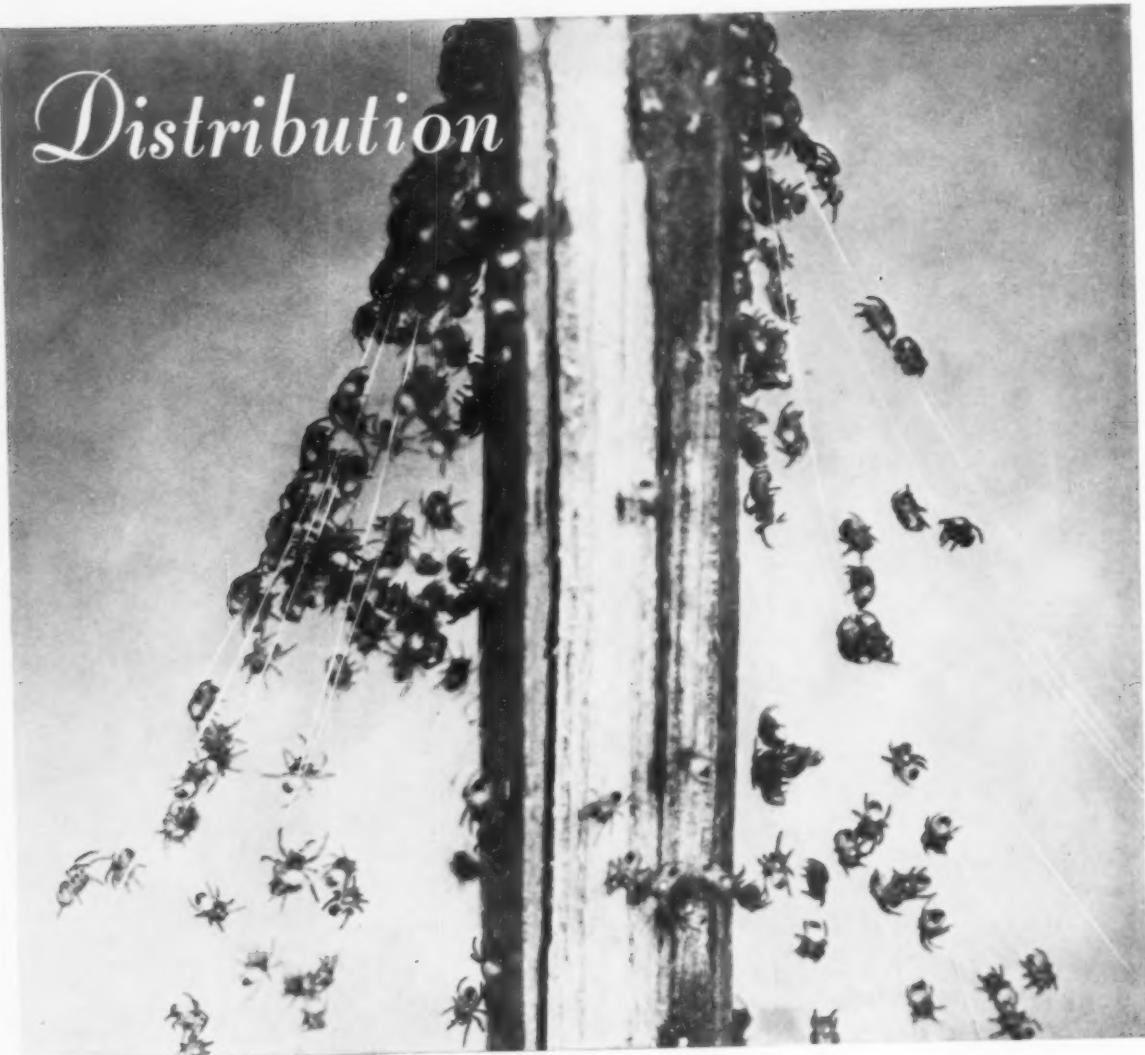
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